EXHIBIT "A"

SCOPE OF SERVICES

DISTRICT FIVE

CONTINUING SERVICES FOR PUBLIC OUTREACH AND SAFETY TECHNICAL SUPPORT

FM# 450214-1-12-01

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EXHIBIT "A"

SCOPE OF SERVICES

DISTRICT FIVE

CONTINUING SERVICES FOR PUBLIC OUTREACH AND SAFETY TECHNICAL SUPPORT

FM# 450214-1-12-01

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A. PURPOSE OF THE AGREEMENT

The Consultant (Consultant) for the Florida Department of Transportation (FDOT) District Five, Office of Safety, shall provide professional, technical, and public outreach assistance to support safety initiatives within the District.

The mission of the FDOT District Five, Office of Safety is to eliminate fatalities and serious injuries of all users by reducing crashes on transportation systems in Central Florida through engineering, education, and enforcement.

Under this contract, the Consultant will support FDOT's mission to reach Vision Zero as part of our team of innovative leaders with broad experience, expertise, and regional partnerships resulting in a network of safe, accessible, and sustainable transportation options for all road users. Activities under this contract should integrate safety, transportation, land use, economic development, engineering, education, enforcement, information intelligence, insight into communities, innovation, investments, and policies. Coordination must reflect the input of the region, FDOT's customers, stakeholders, key transportation partners, MPO/TPO's, local municipalities, economic development agencies, community non-profit organizations', public health partners, visitors, and citizens of Florida.

The Consultant shall perform those services required for public information and involvement activities which may include, but are not limited to, the development and implementation of events, workshops, informational meetings, coordination, facilitate agency/stakeholder collaboration, audiovisual and visual aid preparations, video and slide presentation production, display and exhibit preparation, media conversion, printing services, and community involvement. As FDOT continues to advance the Vital Few Initiatives, social media marketing campaigns can increase the effectiveness of delivering key messages to specific audience groups. The Consultant will provide and implement innovative ideas of how to best reach FDOT's customers.

The Consultant may be required to review highway and other plans at various stages of planning, development, or design in an effort to improve safety for all users and in support of the FDOT's Complete Streets Policy. Reviews may be required at the initiation of each project, key milestones during the project, and at completion. Additional reviews may be required as directed. The FDOT Florida Design Manual, the FDOT Roadway and Traffic Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, Accessing Transit, the Green Book design specifications, and other

sources as needed, shall be used as documents for these reviews. The FDOT may provide additional guidance in terms of transit, rail infrastructure, bicycle/pedestrian, and intermodal facility impacts to be addressed.

The Consultant shall demonstrate good management practices while working on this contract. FDOT will provide a District Project Manager (DPM) for the administration of the terms of this agreement.

B. SERVICES TO BE PROVIDED

1. Task Work Order Driven

Services to be performed under this agreement will be on a task work order basis. When consultant services under this agreement are required by the FDOT, the Project Manager or his/her designee will issue a Task Work order to the Consultant. The Task Work Order will describe the type and amount of services required, a description of the work task(s), schedules, deliverables to be produced, documentation requirements, the completion date for the task(s), and the negotiated total price for the authorized work.

Task Work Orders will be developed in cooperation with the Consultant and issued in writing to the FDOT Project Manager. No work shall be performed under a Task Work Order until both the FDOT and the Consultant have the executed Task Work Order, which authorizes the work included in the Task Work Order to proceed.

The Consultant staff may need to be physically located within Central Florida during many of the tasks in the Task Work Order.

The Consultant's work shall be performed and directed by the key personnel identified in the proposal presented by The Consultant. Any changes in the indicated personnel shall be subject to review and approval by FDOT.

2. Transportation Safety

The Consultant will provide innovative ideas to support the FDOT's effort to eliminate all transportation related fatalities and serious injuries for all modes of travel. The Florida Strategic Highway Safety Plan and the FDOT Vital Few

Initiatives, along with national and international best practices will guide the team.

The Consultant shall provide technical analyses, including data collection, crash evaluation, problem identification, and development of countermeasures based on a comprehensive approach of engineering, education, enforcement, encouragement, and equity. The Consultant will assist the FDOT with promoting and applying a Safe System Approach in alignment with the Federal Highway Administration, incorporating key strategies such as, but not limited to, information intelligence, innovation, insight into communities, investments, and policies.

Support data collection, to influence safety culture efforts, including but not limited to exposure data, operating conditions, before and after data for safety installations, behavioral data, and other relevant aspects of human behavior.

Coordinate with the FDOT Central Office on mapping and the development of tools to support proactive decision making in the systematic safety analysis of safety improvements.

Support District staff with safety outreach and communication with external partner agencies and the public regarding safety education events, new traffic safety devices, outreach regarding specific safety issues and countermeasures, and communication of safety related initiatives.

Support District staff with coordination across internal FDOT departments and with external partner agencies, special interest groups and engaged citizens using context appropriate techniques and methods.

Support District staff with technical consultation tasks and possess sufficient engineering, planning, and design knowledge regarding multimodal safety to thoroughly represent the needs and characteristics of the modes.

Conduct public outreach, workshops, informational meetings representing the Department to assist staff to convey technical information in plain language.

Support with audio visual production of videos, sound, PowerPoint presentations, graphics, display and exhibit preparation, and website development.

The Consultant may be requested to provide training for FDOT staff and agency partners related to all technical aspects of this scope in support of the development of a safe transportation system for all road users. This includes but

is not limited to the preparation of training materials, presentations, brochures, handouts, and meeting summaries. The Consultant may be requested to provide support to FDOT to coordinate with partner agencies, planning organizations, transit agencies, and community organizations to align safety initiatives of the transportation system. This includes facilitation and preparation for meetings, research activities, meeting documentation, and follow up.

3. Safety Studies

Project(s) are for any of the Districtwide nine counties. It is anticipated that many miscellaneous(minor) projects will be identified by the various Community Traffic Safety Teams and any other Community Traffic Safety educators, emergency medical personnel, media people, insurance representatives and the general citizens from all local municipalities. The identified projects may be on State Highways, County and/or any City Streets within the nine Counties. The projects could be in the form of studies only and/or design prior to the preparation of necessary construction plans. All work on projects will be performed to Federal and State Standards.

The Consultant shall perform those miscellaneous engineering services required to conduct studies and/or to design concepts which may include roadway, signing and pavement markings, signalization, lighting, sidewalk and/or bicycle facilities. It shall be the Consultant's responsibility to utilize the very best engineering judgment, practices, and principles possible during the prosecution of the work commissioned under this contract. The Consultant shall be aware that as the project is developed, certain modifications and/or improvements to the original recommendation may be required. The Consultant is to incorporate these refinements into the design and will consider this effort to be an anticipated and integral part of the work. This will not be a basis for any supplemental fee request(s). The Consultant shall demonstrate good project management practices while working on this project. These include communication with the FDOT and others as necessary, management of time and resources, and documentation. The Consultant shall set up and maintain throughout the design of the project a contract file in accordance to FDOT procedures.

The FDOT will provide contract administration, management services, and technical reviews of all work associated with the development and preparation of the studies, research, and concept plans.

The Consultant shall investigate the status of the project and become familiar with concepts (typical sections, alignments, etc.) developed from prior studies. If a Traffic Operational Study report and/or an Engineering Report is available from a prior or current FDOT, County, and/or City PD&E type study, the Consultant shall use the approved concepts as a basis for the design unless otherwise directed by the FDOT.

Safety Studies and Design Analysis:

The Consultant shall prepare a concept to be submitted to the FDOT for review and approval. The concept package shall include the following:

- Transmittal letter
- Location Map(s)
- Typical Section(s) (including bridge sections)
- Data Sheet(s)
- Backup Traffic Data

Geometrics:

The Consultant shall design the geometrics for the project using the design standards that are most appropriate with proper consideration given to the design traffic volumes, design speed, capacity and levels of service, functional classification, adjacent land use, design and driver expectancy, aesthetics, pedestrian, and bicycle concerns, ADA requirements, elder road user policy, access management, utility relocation costs, and scope of work.

The design elements shall include, but not be limited to, the horizontal and vertical alignments, lane widths, shoulder widths, cross slopes, borders, sight distance, side slopes and ditches, lane transitions, superelevation, features of intersections. The geometric design developed by the Consultant shall be an engineering solution that is not merely an adherence to the minimum AASHTO and/or FDOT standards.

Update Access Management:

The Consultant shall be required to prepare an access management plan in coordination with FDOT staff. The Consultant shall review the existing access conditions and prepare an access management plan according to the FDOT's proposed access management classification for the facility, and FDOT Rules 14-96 and 14-97.

The FDOT shall provide proposed access management classification information and information derived from Project Development and Environmental studies, if available, and public hearings to be used by the Consultant in the preparation of this plan.

Traffic Safety Studies (Traffic Safety Analysis):

The purpose of this section of the contract is to provide the FDOT with professional services for conducting needed traffic safety studies. The analysis and conceptual recommendations produced by the Consultant will provide valuable input into the development of traffic safety improvement projects to be included in the proposed safety program. A major objective of this section of the contract is to obtain study results as expeditiously as possible while maintaining a high degree of thoroughness and professionalism. Independent study types have been identified and work tasks for each have been specified. The Consultant shall ensure that all tasks and studies requiring field activities are conducted professionally and in a manner that utilizes accepted safety methods and practices. The safety of the traveling public and the Consultant's field staff shall be an essential goal of each field study activity.

Acronyms

FHWA **F**ederal **H**ig**h**w**a**y **A**dministration
HSIP **H**ighway **S**afety **I**mprovement **P**rogram
MUTCD **M**anual on **U**niform **T**raffic **C**ontrol **D**evices
MUTS **M**anual of **U**niform **T**raffic **S**tudies
Published by the Florida DEPARTMENT of Transportation
HCM **H**ighway **C**apacity **M**anual
HSM **H**ighway **S**afety **M**anual
RSA **R**oad **S**afety **A**udit
LAP **L**ocal **A**gency **P**rogram
SRTS **S**afe **R**outes **t**o **S**chool
DPM **D**epartment **P**roject **M**anager
NCHRP **N**ational **C**ooperative **H**ighway **R**esearch **P**rogram
CTST **C**ommunity **T**raffic **S**afety **T**eam
FC **F**oot **C**andles
MOT **M**aintenance **o**f **T**raffic
SUE **S**ubsurface **U**tility **E**ngineering
RRR **R**esurfacing, **R**estoration, **R**ehabilitation
AASHTO **A**merican **A**ssociation of **S**tate **H**ighway and **T**ransportation **O**fficials

Personnel:

The Consultant’s work shall be performed and/or directed by the key personnel identified in the technical/fee proposal presentations by the Consultant. Any changes in the indicated personnel or the Consultant's office in charge of the work as identified in the Consultant's proposal shall be subject to review and approval by the FDOT.

Subcontracting:

Should the Consultant require the services of a specialist for specialty work, the Consultant is authorized to subcontract these services under the provisions of Paragraph 7.00 of the Standard Professional Services Agreement. Firms selected for subcontracts must be approved in writing and qualified by the FDOT prior to the Consultant authorizing any such work. The Consultant shall be fully responsible for the satisfactory performance, conclusions, and recommendations of all subcontracted work.

Issuance of Work Orders:

Authorization to perform one or more of the studies described in this scope of services shall be conveyed to the Consultant through a written work order issued by the District Safety Engineer or the DPM. The work order shall specify the type of study to be conducted; the location and project limits of each study area; the desired tasks within the composite study; the date on which each study is to be completed and submitted to the FDOT; and the total price to be paid to the Consultant for each study type or additive. Each work order issued shall serve as formal notice to proceed, effective on the date of the work order or on a subsequent date, if specified.

Procedure for Payment:

The Consultant shall submit to the FDOT at the end of each month an invoice for each completed study type or, in the case of composite studies, for each completed study task. The invoice shall reference the work order number, date, study type, unit costs, number of project locations studied, and total invoice amount. Upon approval and acceptance of all procedures for a study type or products for individual study tasks the DPM shall recommend payment for further processing with the FDOT.

Preliminary Report:

All tasks shall have a preliminary report submitted to the DPM prior to the submittal of the Final Report.

Executive Summary:

The report for each study type shall contain an executive summary providing a general overview of the contents of the report including general comments about the location, purpose, findings, conclusions, and recommendations.

Sealing of Reports:

All final reports (and copies) submitted to the FDOT's shall be signed, sealed, and dated by a Florida registered professional engineer of the Consultant (including all subcontracted work).

Index of Study Types

This scope of work contains the study types for which the Consultant will be issued work orders. These study types and the work tasks associated with each study type are as follows:

Study Type I - Signal Warrant Analysis

Task 1 - Qualitative Assessment
Task 2 - 24-Hour Traffic Counts
Task 3 - 8-Hour Turning Movement/ Ped Counts
Task 4 - Field Intersection Inventory (Condition Diagram)
Task 5 - Intersection Delay Analysis (Side Street Approaches)
Task 6 - Crash Analysis
Task 7 - *Warrant Analysis, Benefit to Cost Analysis, Conclusions and Recommendations*
(Including Utility Relocation Costs), Constructability Analysis for each alternative and a Step 1 Roundabout Screening analysis.

Study Type II - Intersection Analysis

Task 1 - Qualitative Assessment
Task 2 - Traffic Volume Data
Sub-Task 2A - Existing Intersection
Sub-Task 2B - Proposed Intersection
Task 3 - Crash Analysis
Task 4 - Improvement Recommendations/BC Cost Analysis, Conclusions, and recommendations, (Including Utility Relocation Costs) Constructability Analysis for each alternative.

Study Type III – Corridor Safety Study

Task 1 – Preliminary Review & Inventory
Task 2 - Crash Analysis
Task 3 – Comprehensive Corridor Review
Task 4 - Improvement Recommendations and Benefit to Cost Analysis (Including Utility Relocation Costs), Conclusions and Recommendations, Constructability Analysis for each alternative.
Task 5 - Preparation and Submission of Report
Task 6 – Corridor Improvement Implementation Plan

Study Type IV – Complete Streets Analysis

Task 1 – Roadway Context Assessment
Task 2 – Multimodal Operational Safety Analysis
Task 3 – Preparation and Submission of Report

Study Type V – Access Management Support

Task 1 – Field Survey
Task 2 – Trip Generation Study
Task 3 – Weaving Analysis
Task 4 – Site Traffic Analysis
Task 5 – Median Opening Study
Task 6 – Access Management Classification Study
Task 7 – Driveway Connection Study

Study Type VI - Composite Study (each of these studies is requested separately)

Task 1 - 8-Hour Turning Movement Count (with pedestrians & bicyclists)
Task 1a - 8-Hour TMC Additive
Task 2 - 4-Hour Turning Movement Count (with pedestrians & bicyclists)
Task 2a - 4-Hour TMC Additive
Task 3 - 2-Hour Turning Movement Count (with pedestrians & bicyclists)
Task 3a - 2-Hour TMC Additive
Task 4 - 24-Hour Traffic Count (Intersection)
Task 5 - 24-Hour Traffic Count (One Approach Additive)
Task 6 - 24-Hour Traffic Count (One Isolated Location)
Task 7 - 7-Day Continuous Traffic Count (Bi-directional)
Task 7a - 7-Day Count Additive
Task 8 – Travel Time/Delay Data Collection (Optional)
Task 9 – Traffic Conflict Study Data Collection
Task 10 – Intersection Delay Study Data Collection
Task 11 – Left Turn Delay Study Data Collection

Task 12 – Spot Speed Study Data Collection
Task 13 – Pedestrian/Bicycle Volume Count (Special Classification)
Task 14 – Vehicle Gap Study Data Collection
Task 15 – Pedestrian Group Size
Task 16 – Intersection Inventory (Condition Diagram)
Task 17 – Compile Traffic Operations/Safety Data
Task 18 – Review of Additional Crash Reports
Task 19 – Qualitative Assessment of Intersection Operation
Task 20 – Highway Lighting Justification
Task 21 – Development of Alternatives and Recommendations
Task 22 – Safety Research
Task 23 – Safety Engineering Analysis
Task 24 - Post Construction Safety Evaluation
Task 25 - Graphics
Task 26 - Meetings
Task 27 – Property Owners Identification and Notification
Task 28 – Construction Cost Estimate
Task 29 – Evaluation of Crash Reduction Benefits
Task 30 – Project Benefit/Cost Ratio and Net Present Value
Task 31 – Technical Support to Community Traffic Safety Teams
Task 32 – Technical Crash Management Geographic Information System Support
Task 33 – Crash Analysis
Task 34 – Fatal Crash Review
Task 35 – Work Zone Safety Review
Task 36 – Level of Service Analysis/Optimization (Interactions)
Task 37 – Signalization Plan Sheet
Task 38 – Roadway Plan Sheet
Task 39 – Contract Plans Package
Task 40 – Safety Review for Design Plans
Task 41 – Maintenance of Traffic Plans Review & Safety Analysis
Task 42 – Safety Assessment Report (SAR)
Task 43 – Traffic Operations/Safety Tracking Application Development
Task 44 – Safe Routes to School Project Review
Task 45 – Safety Improvement Report (Intersection or Segment)
Task 46 – Safety Improvement Implementation Plan (Intersection or Segment)
Task 47 – Highway Safety Manual Project Analysis
Task 48 – Safety Program Briefing
Task 49 – Technical Support to Local Agencies

Task 50 – Lane Repurposing Analysis & Evaluation
Task 51 – Innovative Intersection Alternative Analysis
Task 52 – Safety Project/Program Management Support
Task 53 – Safety Improvement/Work Program Project Scoping Support
Task 54 – Vision Zero Technical Support
Task 55 – Speed Management Strategies
Task 56 – Autonomous and Connected Vehicle Technology Support
Task 57 – Aerial Videography/Photography Technical Support
Task 58 – Preparation and Submission of Report

Description of Study Tasks

This section describes for each study type included in this scope the work required in each task and the task product(s). Also, the units of payment for each work task are defined for the purpose of payment, and the period of performance typically expressed as a function of the number of units to be studied by the Consultant.

Study Type I: Signal Warrant Analysis

1. Purpose

This study is intended to provide a specific determination as to whether a particular intersection meets warrants for signalization and, if so, whether or not a signal should be considered for installation or removal.

2. Basis of Payment

A signal warrant analysis shall be authorized by the DPM on an intersection-by-intersection basis. The established unit price per intersection shall be considered full compensation for all work required to perform this study. However, additional established fees shall be earned for supplemental work task authorized by the DPM.

3. Period of Performance

The normal period of performance allowed for completion of a Signal Warrant Analysis shall be three weeks for a single intersection, with an additional week for every two additional intersections to be studied. The DPM may allow additional time beyond the normal period for supplemental work task or as other conditions warrant.

4. Scope of Work

This section specifies the work tasks to be performed by the Consultant, the responsibilities of the Consultant and the FDOT, the products and reports to be developed by the Consultant and delivered to the FDOT at the completion of Signal Warrant Analysis.

Task 1: Qualitative Assessment

A Professional Engineer of the firm shall visit all intersections under study during the morning and evening peak traffic periods, as determined from the 24-hour traffic counts and during any period which a problem was indicated by the work order. The engineer shall make qualitative assessment of intersection operation, particularly in terms of queue lengths, delays, conflicts, or any other operational characteristics that should be considered in evaluating the need for a traffic signal.

Colored photographs shall be taken of each approach. The photographs shall show the lane configuration and stop bar and shall be taken facing the approaching traffic. A minimum of one photograph shall be taken of each approach. More photos shall be taken if needed to show the physical, unusual or conditions needing to be repaired or maintained.

Additional photographs shall be taken of any geometric, traffic, or traffic control aspects about which the District Safety Engineer should be aware. The Consultant shall recommend to the FDOT the need for supplemental work tasks prior to commencing work on such Tasks.

Task Products:

- Assessment of intersection operation.
- Photographs of intersection.
- Recommendation for supplemental work tasks.

Task 2: 24-Hour Traffic Counts (Intersection)

The Consultant shall collect hourly traffic count data on each approach (up to 4 approaches) to the intersection for a minimum period of 24 hours during typical weekday traffic conditions. In conducting the counts, the Consultant shall furnish an automatic traffic counter that produces a written record of the traffic volumes by time of day. This record may produce either directly or through subsequent interconnection and processing with external electronic hardware. The count data

shall be presented in an acceptable tabular form showing 15- minute interval volumes and hourly summaries. Additional 24-hour counts may be authorized for additional approaches by the DPM as a supplemental activity to this study. Price shall be as quoted in the price summary sheet for Study Type IV, Task 5.

Task 3: Eight-Hour Turning Movement Counts (with pedestrians & bicyclists)

Fifteen-minute turning movement volumes shall be taken for a total of eight hours encompassing the morning, midday, afternoon, and other peak periods during which warranting volumes exist and an off-peak period. Each period shall normally consist of the eight (8) consecutive 15-minute intervals (2 hours) during each period that yields the highest total volume of vehicles entering the intersection as determined from the 24-hour traffic counts. Note that the 2-hour period could begin on any quarter hour. For example, the afternoon peak could be from 4:45 PM until 6:45 PM. The volumes shall include all movements (including pedestrians and heavy vehicles). The price shall be as quoted in the price summary sheet for Study Type IV, Task 1.

Task Products:

- Eight-hour turning movement volumes, all vehicles.
- Eight-hour heavy-vehicle volumes.
- Eight-hour pedestrian volumes.

Task 4: Field Intersection Inventory (Condition Diagram)

The Consultant shall conduct a field inventory of each intersection under study and prepare a condition diagram on standard FDOT forms contained in the Manual on Uniform Traffic Studies or in another format approved by the FDOT. Conditions diagram shall include intersection geometry, dimensions, all traffic control devices, and other roadway or roadside elements that contribute to the quality of intersection operation. This shall include but not be limited to pertinent features to traffic operations such as driveways, sidewalks, bicycle paths, fixed objects, buildings, utility and signal poles, major underground utilities, lighting, etc. The condition diagram shall be a scaled drawing. If an aerial is used, a scaled drawing shall outline intersection features so that the diagram is independent of the aerial. Aerials used in diagrams shall be included in the electronic file submittal.

Task Product:

- Scaled Condition Diagram

Task 5: Intersection Delay Analysis (Side Street Approaches)

An intersection delay analysis of the side street approaches shall be made for a total of the three hours encompassing the morning, afternoon, and off-peak traffic periods as determined from the 24-hour counts. This study shall be performed in accordance with the Manual on Uniform Traffic Studies (MUTS Manual), Chapter XV, Intersection Delay Study. The study provides several parameters including the average stopped delay per approach vehicle presently existing at an intersection. If the average stopped delay per approach vehicle on a side-street approach is greater than 40 seconds for any 15-minute period, then an analysis using the procedures in the MUTS Chapter I, II, and III Traffic Signal Warrant Study, should be conducted. This must be approved as a supplemental task (Study Type IV, Tasks 21 and 21a).

Task Product:

- Intersection delay analysis

Task 6: Crash Analysis

The Consultant will be provided copies of traffic crash records by the FDOT and shall prepare a collision diagram for the intersection under study. The Consultant shall obtain the collision reports via the FDOT'S Crash Analysis Reporting system (CARs) and any available collision database approved by the FDOT. The diagram shall depict the most recent full 5 years for which data is available. Collision diagrams shall be drawn on standard FDOT forms contained in the Manual on Uniform Traffic Studies or on another FDOT approved forms as indicated by the DPM. Collision diagrams shall not be drawn on aerials. A crash analysis shall be performed based on the prepared collision diagram. The FDOT will generally furnish the Consultant with copies of intersection crash reports. If crash reports are not to be furnished by the FDOT, a supplemental work task for obtaining traffic crash records will be authorized.

Task Products:

- Collision Summary
- Crash analysis
- Collision diagram

Task 7: Warrant Analysis and Recommendation

The Consultant shall analyze the collected data in light of the warranting conditions for all nine (9) warrants described in the Manual on Uniform Traffic Control Devices, the FDOT's Manual on Uniform Traffic Studies, HSIPG and accepted traffic engineering practice. From this analysis, a recommendation shall be formulated as to whether or not a traffic signal should be considered for installation or removal. The recommendation and justification for it shall be documented in a summary report. Attached to this report shall be completed Departmental warrant analysis forms, 24 hour counts, 8 hr. TMC, delay analysis, the condition diagram, the collision diagram, crash analysis, benefit to cost analysis, analysis of ability to construct alternatives within existing R/W, and the products of any authorized supplemental work tasks. In addition to the signal warrant recommendations, the report should include a Step 1 Roundabout Screening analysis found in the Florida Intersection Design Guide. The intersection studies shall be documented in such a package. If a signal is recommended for installation, then additional phasing analysis shall be completed, and the phase warrant forms attached. If other recommendations are given, an improvement concept shall be included. The improvement concept shall be a scaled drawing.

Task Product:

- Final warrant analysis report that is signed, sealed, and dated by a registered professional engineer.

Study Type II: Intersection Analysis

1. Purpose

   This study involves the analysis of an existing or proposed intersection in order to develop a specific conceptual design recommendation in accordance with the HSIPG that can be utilized in preparing plans for the construction of a new or modified inter-section. This analysis may include geometric improvements to improve the safety.

2. Basis of Payment

   The basic unit of payment shall be for two types of roadway situations; i.e. an existing intersection or proposed intersection. Separate fees shall be established for the two. These two situations are defined as follows:

Existing Intersection: The intersection exists and may be presently signalized or unsignalized.

Proposed Intersection: The intersection does not presently exist.

Additional established fees shall be earned for supplemental work tasks authorized by the DPM.

3. Period of Performance

The normal period of performance allowed for completion of a signal operation analysis shall be one (1) month for a single intersection. Each additional intersection location in a work order shall add one week to the period of performance. The DPM may allow additional time beyond the normal period for supplemental work tasks or as other conditions warrant.

4. Scope of Work

This section specifies the work tasks to be performed by the Consultant the responsibilities of the Consultant and the FDOT, and the work task products to be developed by the Consultant and delivered to the FDOT.

Task 1: Qualitative Assessment

A Professional Engineer shall investigate the intersection during peak periods to identify any geometric, traffic safety, traffic operations, and traffic control conditions that may provide input to the determination of optimal signal control. The peak periods shall be determined by 24-hour traffic counts furnished by the FDOT or provided by The Consultant (supplemental work, Study Type IV - Task 4). The Consultant shall recommend to the DPM the need for supplemental work tasks. Colored photographs shall be taken of all intersection approaches with emphasis on obtaining visual information that would be of value to the FDOT during any subsequent project plans preparation activities. For example, utility conflicts, right-of-way constraints, obstructions, unusual geometrics, deficient pavement markings, etc., should be photographed or detailed. Photos and/or detailed graphics shall be included in the conceptual recommendation report to be developed in Task 3.

Task Products:

- Assessment of intersection operation
- Color Photographs
- Recommendations for supplemental work tasks

Task 2: Traffic Volume Data

Separate work task description exists for this task for an intersection analysis of either an existing or proposed intersection. The 8-hour turning movement data will include pedestrian and bicyclist count data.

Sub-Task 2A: Existing Intersection

Fifteen-minute turning movement volumes shall be taken for a total of eight hours encompassing the morning, midday peak and afternoon traffic periods and/or peak periods during which warranting volumes exist and an off-peak period. Each period shall normally consist of the eight (8) consecutive 15-minute intervals (2 hours) during each period that yields the highest total volume of vehicles entering the intersection. Note that the 2-hour period could begin on any quarter hour. For example, the afternoon peak could be from 4:45 PM to 6:45 PM. The volumes shall include all movements (including pedestrians and heavy vehicles). The price shall be as quoted in the price summary sheet for Study Type IV, Task 1.

Task Products:

- Eight-hour turning movement volumes, all vehicles
- Eight-hour heavy-vehicle volumes
- Eight-hour pedestrian volumes

Sub-Task 2B: Proposed Intersection

The Consultant shall develop 8 hours of traffic volume data appropriate for computerized analysis of the proposed intersection using the FDOT's TOPCOP package or available programs of the latest adopted version of the HCM. To estimate or project the required turning movement counts, the Consultant shall utilize available network traffic and planning data furnished by the FDOT and shall apply appropriate factors as dictated by local trends and accepted practice. The FDOT shall furnish the Consultant with all available traffic data that is relevant to the intersection under study.

Task Product(s):

- 8-hour projected turning movement volumes, all vehicles
- 8-hour projected heavy-vehicle volumes
- 8-hour projected pedestrian volumes

Task 3: Crash Analysis

The Consultant will be provided copies of traffic crash records by the FDOT and shall prepare a collision diagram for the intersection under study. The Consultant shall obtain the collision reports via the FDOT'S Crash Analysis Reporting system (CARs) and any available collision database approved by the FDOT. The diagram shall depict the most recent full 5 years for which data is available. Collision diagrams shall be drawn on standard FDOT forms contained in the Manual on Uniform Traffic Studies or on another FDOT approved forms as indicated by the DPM. Collision diagrams shall not be drawn on aerials. A crash analysis shall be performed based on the prepared collision diagram.

The FDOT will generally furnish the Consultant with copies of intersection crash reports. If crash reports are not to be furnished by the FDOT, a supplemental work task for obtaining traffic crash records will be authorized.

Task Products:

- Collision summary
- Crash analysis
- Collision diagram

Task 4: Improvement Recommendations

From the results of previous tasks and any supplemental work tasks, the Consultant shall prepare a report that presents the conceptual recommendations for optimizing the intersection's safety by reducing crashes. As a minimum the report shall include geometrics, channelization, signalization phasing and operation and signal display improvement. The proposed intersection improvement shall be supported by a sketch, printouts, benefit to cost analysis, analysis of ability to construct alternatives within existing R/W, and explanations of the computerized operation analysis (where applicable) and peak period field investigation.

The Consultant shall submit 3 copies of each intersection in an 8 1/2" x 11" format (or 11" x 17" format, as needed).

Task Product:

- The Consultant shall submit copies of the conceptual recommendations report that are signed, dated, and sealed by a registered professional engineer.

Study Type III: Corridor Safety Study

1. Purpose

The Corridor Safety Study involves a comprehensive, systematic review of a particular arterial from a safety perspective. The required product of this study is a "TOPICS" type report that sets forth specific improvements that may be used as a basis for the development of a corridor safety improvement program. Elements of the study report are intended to provide input to the plans preparation process for the recommended improvement projects.

2. Basis of Payment

The basic unit of payment for this study shall be the number of two-way miles comprising the section to be studied. Composite mileage shall be rounded to the nearest tenth of a mile and shall be established by the FDOT prior to issuance of the work order. The minimum two-way mileage amount for any study shall be 1.0 mile. The established unit price for each two-way mile studied shall be considered full compensation for all work required to perform this study. However, additional established fees shall be earned for supplemental work tasks authorized by the DPM Compensation for each signal operation analysis shall be at the established unit price for a Type II Study.

3. Period of Performance

The normal period allowed for completion of a Corridor Safety Study shall be one month for the first 2.0 two-way miles plus two weeks for each additional 2.0 two-way miles or fraction thereof. Signal Operation Studies authorized by the FDOT and included as part of an Arterial Study are to be conducted concurrently with the Arterial Study and no additional time shall be allotted for their completion. The DPM may allow additional time beyond the normal period for supplemental work tasks or as other conditions warrant.

4. Scope of Work

This section specifies the work tasks to be performed by the Consultant, the responsibilities of the Consultant and the FDOT, and the work task products to be developed by the Consultant and delivered to the FDOT.

Task 1: Preliminary Review and Inventory

Using procedures defined in the MUTS, the CONSULTANT shall conduct a field inventory, at all locations listed, for submittal to the DEPARTMENT. The inventory shall include the following:

1. Fully dimensioned condition diagram.
2. Speed limits, including advisory speeds.
3. Distances between intersections.
4. Existing traffic control.
5. Pedestrian/trail crossings.
6. Sidewalks, bike lanes and other pedestrian/bicycle facilities.
7. Transit stops and associated facilities
8. Major pedestrian generators/attractors

Task Product

- Corridor preliminary review & inventory

Task 2: Crash Analysis

The Consultant will be provided copies of traffic crash records by the FDOT and shall prepare a collision diagram for the intersection under study. The Consultant shall obtain the collision reports via the FDOT'S Crash Analysis Reporting system (CARs) and any available collision database approved by the FDOT. The diagram shall depict the most recent full 5 years for which data is available. Collision diagrams shall be drawn on standard FDOT forms contained in the Manual on Uniform Traffic Studies or on another FDOT approved forms as indicated by the DPM. Collision diagrams shall not be drawn on aerials. A crash analysis shall be performed based on the prepared collision diagram. The Department will generally furnish the Consultant with copies of intersection crash reports. If crash reports are not to be furnished by the FDOT, a supplemental work task for obtaining traffic crash records will be authorized.

Task Products:

- Collision Summary
- Crash analysis

Task 3: Comprehensive Corridor Review

The CONSULTANT shall complete a comprehensive review of the corridor to identify factors contributing to safety performance. Effort should be given to

acknowledge all aspects of safety theory, including nominal, substantive, and perceived safety performance. The Consultant shall review, summarize, and analyze all available crash data, pedestrian/bicycle counts, motor vehicle traffic counts, and exposure data. The Consultant shall evaluate and document inconsistencies between roadway design/configuration, and land use context, and urban/built form outside of the public right- of-way. A review of existing local government transportation and land use plans shall be completed and a summary of the relationship between adjacent land uses and access/mobility on the corridor should be included as part of the corridor review. Consultations with external agencies such as the local jurisdiction and transit agencies shall be completed at the direction of the DPM.

Task Product

- Comprehensive corridor review and supporting documentation

Task 4: Improvement Recommendations

The products of previous tasks within this study shall be analyzed collectively and the Consultant shall develop and submit to the DPM for review and comment a coordinated sequence of improvements to improve the safety specific to the arterial corridor. Recommended improvements shall be based upon consideration of all relevant corridor elements and shall be directed at improving safety and achieving a context sensitive roadway. Recommended improvements shall be based upon the following approach to improving safety of road users:

- Consideration of the unique needs and behaviors of pedestrians, cyclists, and motorists
- Consideration of transit operations (if applicable) and opportunities to improve access to transit service for pedestrians and cyclists
- Extra emphasis should be given to improvements aimed at generating a safety and operational benefit for multiple modes of transportation.
- Extra emphasis shall be placed on generating recommendations addressing all aspects of safety: engineering and physical improvements; education/public outreach; law enforcement needs; and encouragement/behavioral incentive opportunities
- Unique corridor elements or patterns that may influence multi-modal activity including surrounding land use and urban form
- Emphasis on short-term improvements that can be completed with minimal effort. Recommendations for major construction alternatives

should be proposed only when other less intensive alternatives are not likely to generate a significant impact to safety.
- Consider and document any potential impacts to access management.
- Emphasis should be given to those projects having high benefit to cost ratios and net present value.
- Implementation of the Department's Complete Streets policy

Task Product:

- Conceptual recommendations for arterial improvements.

Task 5: Preparation and Submission of Report

The Consultant shall document the results and recommendations from the Corridor Study in an 8" x 11" report (with 11" x 17" supporting documents, as needed) and submit the report to the DPM for review and comment. The report shall include photos (and/or graphics), summaries of inventory data, results of signal operation studies, arterial coordination analysis, conceptual drawings of recommended improvements with supporting documentation, cost estimates, benefit to cost analysis, and a proposed sequential improvement plan.

A separate report shall be prepared and submitted to the DPM for review and comment for each arterial studied and 3 signed/sealed copies shall be submitted upon completion. To the maximum extent possible, each report shall be organized in such a manner to facilitate disassembly and piecemeal presentation of specific conceptual recommendations to design and plans preparation engineers.

Task Product:

- Final report containing the results and recommendations from each arterial studied that are signed, sealed, and dated by a registered professional engineer.

Task 6: Corridor Improvement Implementation Plan

Upon approval of the Recommended Improvements Report, a Corridor Improvement Implementation Plan shall be completed at the direction of the DPM. The Plan shall serve as a supplementary document to assist the FDOT in programming improvements for implementation. Each proposed improvement recommendation in the Corridor Improvement Recommendations Report shall be categorized and assigned an implementation strategy. Information to be summarized and included in the Corridor

Improvement Implementation Plan shall be collected and documented by the Consultant in coordination with FDOT and local government staff. Each task's implementation strategy shall include the following:

- Improvement/project delivery method (for engineering improvements only).
- Anticipated time frame required for implementation of each task.
- Estimated cost for each task and potential funding sources.
- Responsible agency or District representative(s) for implementation of each strategy.
- Calculation of benefit to cost ratios and/or net present value calculations as directed by the DPM.
- Overall policy and organizational recommendations and opportunities to address unique issues from a systemic (system-wide) approach (if applicable).
- Recommendations for more detailed studies related to a specific recommendation or issue.
- Additional elements as directed by the DPM.

Task Product

- Improvement Implementation Plan and supporting documentation.

Study Type IV: Complete Streets Analysis

1. Purpose

   Corridors that have been designed and constructed without respect for the surrounding roadway context often result in above average crash rates and systemic safety challenges. This study is intended to provide a context sensitive and multimodal approach to roadway design and operation, which is critical to reducing crashes and improving substantive safety.

2. Basis of Payment

   The basic unit of payment shall be for each location requested.

3. Period of Performance

   The normal period of performance allowed for completion of a Complete Street Analysis shall be three weeks per location. The DPM may allow additional time beyond the normal period for supplemental work tasks or as other conditions warrant.

4. Scope of Work

This section specifics the work tasks to be performed by the Consultant, the responsibilities of the Consultant and the FDOT, and the work task products to be developed by the Consultant and delivered to the FDOT.

Task 1: Roadway Context Assessment

Context assessment is critical to ensure appropriate design of a roadway segment or corridor. As part of this task, the Consultant may be required to identify, screen, and review candidate corridors for complete street treatment, using sound engineering and planning standards consistent with the FDOT Florida Design Manual, Chapter 130, the Florida Green Book, Florida Strategic Highway Safety Plan, and the Complete Streets Implementation Plan – 2015 as appropriate.
This work may include but is not limited to:

- public outreach to community stakeholders (property owners, residents, businesses, advocates and government agencies) to identify key issues and needs in the subject corridors;
- analyses of users and roadway characteristics to identify missing complete street components;
- review of local government land development code, land use plans and comprehensive plans to determine corresponding roadway context zone for existing and future conditions
- identification of potential complete streets treatment options;
- development of a "Project Purpose and Need Statement" and for each corridor that addresses safety issues and community concerns;
- feasibility/fatal flaw analyses for corridor improvement options to include a review of right of way availability, access issues, utility impacts, permitting and environmental impacts, constructability issues (specific project concerns) and maintenance of traffic;
- development of project cost estimates, phasing, funding, and feasibility for potential public-private partnership opportunities for candidate projects;
- preparation of Complete Street Action Plans for the respective corridors including a summary of recommended cost feasible complete street improvements/ strategies and associated project phasing and funding which will reference AASHTO's Guide for Geometric Design of Transit Facilities, Guide for Planning, Designing, and Operating Pedestrian Facilities, Guide for the Development of Bicycle Facilities, and National Association of City Transportation Officials' Urban Street Design Guide, Urban Bikeway Design Guide, and Institute of Transportation Engineers' Designing Walkable Urban

Thoroughfares: a context sensitive approach, and FHWA's Bicycle Facilities and the Manual on Uniform Traffic Control Devices as appropriate.

Task Product

- Report summarizing the assessment of the roadway context.

Task 2: Multimodal Operational Safety Assessment

Qualitative Assessment

The Consultant shall conduct a qualitative assessment during peak periods to identify any availability and condition of roadways, sidewalks, intersections and facilities at or near bus stops and other intermodal connections to determine what improvements would be needed to accommodate roadway users, in a more safe and effective manner. The initial qualitative assessment could include but not be limited to:

- Availability and condition of sidewalks, side paths, intersection pedestrian crossings, signalization, and bicycle access surrounding bus stops.
- Traffic conditions such as flow, volumes, and speed.
- Lane widths, surface conditions, adjacent on-street parking, and pedestrian bridges.
- Traffic mix and related considerations that could adversely create safety impediments for freight, bicycle/pedestrian movement and accessibility to transit.

Peak periods shall be determined by 8-hour traffic counts furnished by the FDOT or Consultant (as a Task identified in the Study Type VI). The Consultant shall recommend to the DPM the need for supplemental work task.

Colored photographs shall be taken of all intersection approaches with emphasis on obtaining visual information that would be of value to the FDOT during any subsequent project plans preparation activities. For example, sight/triangle obstructions, landscaping, unusual crosswalk/intersection geometrics to transit stop location, deficient pavement markings and signage, etc., should be photographed or detailed. Photos and/or detailed graphics shall be included in the conceptual recommendation report to be developed in Task 3.

Task Product:

- Multimodal Operational Safety Assessment
- Color Photographs

- Recommendations for supplemental work task

Multimodal Field Inventory (Condition Diagram)

The Consultant shall collaborate with District's modal agencies in the documentation and preparation of condition diagrams of any safety impediments adversely impacting freight access/mobility, bicycle/pedestrian movement and accessibility to transit stops and intermodal connections. The inventory should take into consideration sidewalk and roadway crossing facilities in the entire catchment area surrounding a transit stop, not just in the immediate vicinity of the stop location. The inventory should also include freight routes, access points, and operational/safety impediments for freight vehicles.

The Consultant will submit such information on standard FDOT forms contained in the MUTS or in another format approved by the FDOT. The Conditions diagram shall include intersection geometry. This shall include but not be limited to traffic operations such as driveways, sidewalks, bicycle paths, fixed objects, building, utility and signal poles, street signs, lighting, etc.

Task Product:

- Condition Diagram
- Aerial Photography
- Color photographs of all approaches to bus stop location/intersection.

Conflict Analysis

The Consultant shall collaborate with the District's modal agencies and if necessary with local police departments to analyze and obtain any available supporting conflict documentation for preparation of conflict diagrams where bicycle/pedestrian movement and access impediments may have been evident near transit access points and intermodal connections to determine potential prioritized improvements. Impacted transit access and freight mobility sites should be evaluated comprehensively so that an appropriate combination of bicycle/pedestrian and transit safety treatments can be applied.

Documentation may include but not be limited to: roadway and transit stop characteristics, freight access points, major freight movements, traffic conditions at and near sites of conflict, time of day, driver and pedestrian behavior, land use surrounding conflict site including transit stop locations, and any other contributing circumstances. The diagram shall depict the most recent full 5 years for which data is available. Conflict diagrams shall be drawn on standard FDOT forms contained in the MUTS or on another FDOT approved form as indicated by

the DPM. A conflict analysis shall be performed based on the prepared conflict diagram and reports.

Task Product:

- Conflict Analysis
- GIS Conflict diagram

Feasibility Review

The CONSULTANT may be required to conduct detailed evaluation of selected corridors to identify cost feasible facility-specific complete street improvements to address safety, connectivity, mobility and access issues, and community concerns within the respective corridors. This work may include developing analysis methodologies summarizing project information, assumptions, and analysis approach; conducting public outreach to community stakeholders within corridors, e.g., interviews with sample of property owners, businesses, and residents to identify key issues and needs; identification of missing complete streets components through an evaluation of roadway users and characteristics which may include a detailed review of:

- Traffic operations;
- Automobile, pedestrian, and bicycle crash trends;
- Pedestrian crossing safety;
- Bicycle usage and accessibility;
- Physical improvements, e.g., sidewalks, bicycle facilities, medians, lighting, and landscaping;
- Transit locations, amenities, and accessibility; linking of existing, programmed, or planned bicycle lanes and multi-use trails; reviewing local land use and transportation plans and recent development activity and trends as applicable to each corridor; developing a "Project Purpose and Need Statement" for each corridor that addresses issues and concerns and identifies general corridor characteristics; identifying complete street treatment options for each corridor using best practices; and conducting feasibility/fatal flaw analyses for corridor improvement options to include a review of:
    - Right of way availability;
    - Access issues;
    - Utility impacts;
    - Permitting and environmental impacts;
    - Constructability issues (specific project concerns);
    - Cost effectiveness; and
    - Maintenance of traffic.

The Consultant may be required develop technical memoranda for the respective corridors documenting:

- existing conditions including identified safety and access issues, as well as community concerns;
- missing complete streets components;
- project Purpose and Need Statement;
- evaluation of complete streets options; and
- feasible corridor improvement options.

The Consultant may be required to conduct or review assessments of the operational and safety effects of proposed geometric design and/or traffic control features for selected corridors. This task may also require the Consultant to prepare Dynamic Traffic Assignment (DTA) simulation and/or micro/mesoscopic-simulation, using CORSIM, VISSM, CUBE AVENUE, or other traffic simulation software, for operational analysis and presentation purposes. The Consultant may be required to conduct reevaluations of previously approved Project Development and Environmental (PD&E) documents based on proposed changes in corridor geometry and traffic control features.

Task Product:

- A report summarizing feasibility of proposed improvements.

Improvement Recommendations

From the results of previous tasks and any supplemental work tasks, the Consultant shall prepare a report that presents prioritized conceptual recommendations on safety measures and factors that could reduce freight/transit/bicycle/pedestrian conflicts. The recommendations shall consider the impacts of access management. At a minimum the report shall include transit path/crosswalk geometrics, medians, traffic/pedestrian signalization and phasing and any observed traffic operations and signal displays needing improvement. The proposed improvements shall be supported by a sketch, printouts, benefit to cost analysis and explanations of computerized analysis (where applicable) and peak period field investigation.

The Consultant shall submit diagrams of each intersection in an 8 ½" x 11" format.

Task Product:

- A conceptual recommendations report and all final work.

Task 3: Preparation and Submission of Report

The Consultant shall document the results and recommendations from the Transit Corridor Assessment in an 8½ " x 11" report and submit the report to the DPM for review and comment or any other format predetermined by the DPM. The report shall include photos (and graphics), summaries of inventory data, tabulations and collision diagrams, speed studies from bicycle/pedestrian travel time studies, conceptual drawings of recommended improvements with supporting documentation, cost estimates, benefit to cost analysis and a proposed prioritized improvement plan or any other reporting criteria as predetermined by the DPM.

A separate report shall be prepared and submitted to the DPM for review and comment for each conceptual transit corridor assessment and 5 copies shall be submitted upon completion. To the maximum extent possible, each report shall be organized in such a manner so as to facilitate disassembly and piecemeal presentation of specific conceptual recommendations to design and plans preparation engineers.

Task Product:

- The Consultant should submit a copy of the results and recommendations from the Transit Corridor Assessment, and an electronic copy.

Study Type V: Access Management Support

1. Purpose

   Access to the roadway system from private developments impacts the volumes and movement of vehicles and vulnerable road users along a corridor. This study would be a means to evaluate and anticipate these impacts, in order to identify operational issues and locations with high potential for crashes.

2. Basis of Payment

   The basic unit of payment shall be for each location requested.

3. Period of Performance

The normal period of performance allowed for completion of an Access Management Support shall be three weeks per location. The DPM may allow additional time beyond the normal period for supplemental work tasks or as other conditions warrant.

4. Scope of Work

This section specifies the work tasks to be performed by the CONSULTANT, the responsibilities of the CONSULTANT and the DEPARTMENT, and the work task products to be developed by the CONSULTANT and delivered to the DEPARTMENT.

Task 1: Field Survey

Under this task, the CONSULTANT shall establish horizontal spacing between driveways and median openings for the purpose of evaluating access management spacing criteria.

Task Product:

- Summary of the horizontal spacing information for driveways and median openings.

Task 2: Trip Generation Study

The purpose of this study is to establish trip rates for traffic generators not included in the ITE Trip Generation Manual. The FDOT will indicate the type of use to be evaluated. The Consultant shall identify a minimum of five (5) specific sites to be studied, subject to the FDOT approval. The Consultant shall obtain approval from the property owner to conduct the required traffic counts. Trip generation rates shall be developed for the morning and afternoon street peak hours as well as for daily trips. This study will adhere to the trip generation study requirements in the Trip Generation Handbook.

Task Product:

- Trip generation for special uses

Task 3: Weaving Analysis

The Consultant shall prepare a weaving analysis in accordance with current Highway Capacity Manual procedures. The analysis shall be completed for one weaving section using Department-approved computer software.

Task Product:

- Summary results for the weaving analysis

Task 4: Site Traffic Analysis

The Consultant shall prepare or review site traffic analysis for development projects. Daily and peak hour traffic counts shall be obtained for the site entrances, adjacent streets, and nearby intersections. An estimate of daily and peak hour traffic volumes shall be developed from the current ITE Trip Generation Manual. The estimated new trips will be assigned to the adjacent roads and intersections. The analysis will determine the impacts to the adjacent roadways and develop geometric recommendations to mitigate those impacts. The results of the site traffic analysis will be documented in a report.

Task Product:

- Site traffic analysis report

Task 5: Median Opening Study

The purpose of this study is to evaluate median openings to determine whether the median opening spacing is in conformance with Access Management Rule, Chapter 14-96 and 14-97. This study would also evaluate median openings regarding the need for crossing facilities for bicycles and pedestrians. The study shall contain a description of the corridor and widening project, the access classification, whether or not the road is included in the FIHS or SIS, the required spacing, the recommended median opening types and locations, and recommended bicycle/pedestrian facilities, if applicable. The recommendations shall be based on field reviews, available traffic volumes, crash data, observed conflicts, adjacent land uses, adjacent street system, ability of surrounding median openings to handle increased U-turn traffic, bicycle and pedestrian crossing volumes, and other pertinent factors. The results shall be documented in a report.

Task Product:

- Median Opening Study

Task 6: Access Management Classification Study

The Consultant shall perform an access management classification study in relation to context classification on designated state roads on the State Highway System. This study shall be conducted in accordance to Section 335.188(3)(c), Florida Statutes and applicable rules and procedures. The study shall include the review and evaluation of roadway data including existing and future conditions to determine the appropriate classification for that roadway.

Task Product:

- Access management classification study.

Task 7: Driveway Connection Study

The purpose of this study is to evaluate driveway connections for Department projects and to determine whether they are in compliance with Access Management Rule, Chapter 14-96 and 14-97, and Department Standard Indexes. The study shall contain a description of the project, the access classification, connection spacing requirements, existing connection locations, recommended connection closings, relocations, and changes in widths, justification for modifying or closing, and all data collected. The recommendations shall be based on field reviews, available traffic volumes, crash information, adjacent land uses, adjacent street system, adjacent connections, safety considerations, site layout, and other pertinent factors. The results shall be documented in a report.

Task Product:

- Driveway connection study and marked up project plan sheets, indicating existing driveways and recommended closings, relocations and changes in widths.

Study Type VI: Composite Study

1. Purpose

   The composite study is designed to enable the DEPARTMENT to use the services of the CONSULTANT in solving a variety of traffic safety problems. This study requires the DEPARTMENT and CONSULTANT to develop the study design for a particular traffic safety problem by selecting appropriate tasks defined herein.

2. Basis of Payment

   This study is designed to be flexible; therefore, each task shall be priced individually. Any combination of tasks may be selected for a particular composite study or as a supplement to Study Types I and II. Payment for each composite study will be the summation of the individual prices for selected tasks.

3. Period of Performance

   The time period allowed for completion of a composite study shall be based on the types of tasks to be performed. The normal period allowed for other types of studies in this contract should be used as a general guide in determining the period of performance for a particular composite study. The DPM and the

CONSULTANT will determine a mutually acceptable performance period and due date.

4. Scope of Work

This section specifies the work tasks that may be performed by the CONSULTANT for a particular composite study, the responsibilities of the CONSULTANT and the DEPARTMENT, and the work task products to be developed by the CONSULTANT and delivered to the DEPARTMENT.

Use of Video Equipment for Tasks 1 through 6 and Task 13:

For Tasks 1 through 7 and Task 13, the use of video equipment to record Turning Movement Counts (TMC), Traffic Counts, and Pedestrian/Bicycle Counts is preferred over the use of tally sheets or mechanical or electronic turning movement counting boards and should be utilized by the Consultant when deemed appropriate by the FDOT. When using video collection, the equipment shall be capable of recording the required interval of data and shall be placed in such a manner as to provide the same view or better as on-site count personnel would have. Video integrity will be confirmed at the time of deployment by viewing live video on a monitor. Additionally, the equipment shall be placed in a manner that will not impede or alter the flow of vehicular, pedestrian, or bicycle traffic. The video collection equipment shall be containerized in such a manner as to reasonably provide weather resistance and prevent vandalism or tampering. The video data shall be collected and backed-up in the field and shall then be delivered to an office to be processed.

Alternatively, if video equipment is determined to be unfeasible or not preferable, they may use tally sheets/mechanical/electronic turning movement counter boards in order to record separately the number of pedestrians and bicyclists. The Consultant may also use an automatic traffic counter that produces a written record of the traffic volumes and the time of day, either directly or through subsequent interconnection and processing with external electronic hardware.

Task 1: 8-Hour Turning Movement Count (With Pedestrian and Bicyclist)

Using procedures in the MUTS, the Consultant shall collect and summarize 8 hours of 15 minute turning movement counts with hourly summaries, at the intersections. The counts shall include AM peak, PM peak and off-peak periods. The specific time frames for each period during which turning movement counts are to be collected shall be determined by the Consultant (based on 7 day directional counts) and approved by the FDOT. The 8 hour period recorded shall yield the highest total volume of vehicles entering the intersection. Included in

this task are 8 hours of pedestrian and bicyclist volume counts and vehicle classification counts. Counts should not be taken during adverse weather conditions or when the intersection is within a construction zone.

The Consultant must count vehicles, pedestrians and bicyclists. A sketch will be made of sufficient detail to show the approach lanes, left and right turn lanes, and whether there is a median or other type of separation. If the intersection is signalized the head arrangement should be shown.

Task Product:

- Eight-hour turning movement volumes with corresponding vehicle classifications – with or without video.
- Eight-hour pedestrian and bicyclist volumes – with or without video.

Task 1A: Additive (Optional)

Provide additional person to conduct TMC. One or more additional persons may be authorized by the DPM for the conduct of TMC counts, on an as needed basis.

Task 2: 4-Hour Turning Movement Count (with Pedestrians and Bicyclists)

Using procedures in the MUTS, the Consultant shall collect and summarize 4 hours of 15 minute turning movement counts with hourly summaries, at the intersections. The counts shall include AM peak and/or PM peak. The specific time frames for each period during which turning movement counts are to be collected shall be determined by the Consultant (based on 7 day directional counts) and approved by the FDOT. The 4 hour period recorded shall yield the highest total volume of vehicles entering the intersection. Included in this task are 4 hours of pedestrian and bicyclist volume counts and vehicle classification counts.

Task Product:

- Four hour turning movement volumes (with or without video) with corresponding vehicle classifications,
- Four-hour pedestrian and bicyclist volumes with or without video.

Task 2A: Additive (Optional)

Additional person for conduct of TMC: One or more additional persons may be authorized by the DPM for the conduct of TMC counts on an as needed basis.

Task 3: 2-Hour Turning Movement Count (With Pedestrian and Bicyclist)

Using procedures in the MUTS, the Consultant shall collect and summarize 2 hours of 15-minute turning movement counts with hourly summaries, at the intersections listed. The specific time frames for each period during which turning movement counts are to be collected shall be determined by the DPM. Included in this task are 2 hours of pedestrian and bicyclist volume counts and vehicle classification counts.

Task Product:

- Two hour turning movement volumes (with or without video) with corresponding vehicle classifications
- Two -hour pedestrian and bicyclist volumes with or without video

Task 3A: Additive (Optional)

Additional person for conduct of TMC: One or more additional persons may be authorized by the DPM for the conduct of TMC counts on an as needed basis.

Task 4: 24-Hour Traffic Count (Intersection)

The Consultant shall collect traffic count data on each approach to the intersection for a minimum period of 24 hours during typical weekday traffic conditions. The count data shall be presented in an acceptable tabular form showing 15-minute interval volumes and hourly summaries.

Task Product:

- 24-hour approach volume counts – with or without video.

Task 5: 24-Hour Traffic Count (One Approach Additive)

When an intersection has more than 4 approaches or when there are adjacent legs or driveway openings that should be counted with the regular intersection the DPM may authorize the Consultant to collect hourly traffic count data on one approach to an intersection for a minimum period of 24 hours. In conducting these supplemental counts, the Consultant shall use an automatic traffic counter that produces a written record of the traffic volume and the time of day as defined in Task 4 above. This task may be authorized only with Task 4.

Task Product:

- 24-hour volume count at one approach – with or without video.

Task 6: 24-Hour Traffic Count (One Isolated Location)

The Consultant shall collect hourly traffic count data at one isolated location for a minimum period of 24 hours during typical weekday traffic conditions. In conducting the counts, the Consultant shall use an automatic traffic counter which produces a written record of the traffic volumes and the time of day, either directly through subsequent interconnection and processing with external

electronic hardware. The count data shall be presented in an acceptable tabular form showing 15-minute interval volumes and hourly summaries. A pair of one-way streets is considered as one (1) location.

Task Product:

- 24-hour two-way volume count at one specified location.

Task 7: Day Continuous Traffic Count (Bi-directional)

A count station is one location, two directions, or in the case of one-way pairs, one count for each direction.

To determine the volume of traffic using a road, the DPM may authorize the collection of seven-day continuous traffic counts at select stations. In conducting the counts, the Consultant shall use an automatic traffic counter that produces a written record of the traffic volume and the time of day, either directly or through subsequent interconnection and processing with external electronic hardware. From the count data, an acceptable tabular presentation of directional traffic volumes shall be developed showing 15-minute interval volumes and hourly summaries over the seven consecutive days. A graphical presentation shall be developed showing hourly interval volumes over the seven consecutive day period. The seven-day period shall not include a holiday.

Task Product:

- Seven day graphs and tables

Task 7A: Additive (Optional)

Additional 7-Day Continuous Traffic Count Stations requested for the same route and or study.

Task 8: Travel Time/Delay Data Collection (Optional)

The Consultant shall collect data necessary to perform a travel time or delay study, in accordance with the procedures outlined in the most current MUTS Manual.

Task Product:

- Electronic copies of the draft report and final report.

Task 9: Traffic Conflict Study Data Collection

The Consultant shall collect data necessary to perform Traffic Conflict Study, in accordance with the procedures outlined in the most current MUTS Manual.

Task Product:

- Electronic copies of the draft report and final report.

Task 10: Intersection Delay Study Data Collection

The Consultant shall collect data necessary to perform Intersection Delay Study, in accordance with the procedure outlined in the most current MUTS Manual.

Task Product:

- Electronic copies of the draft report and final report.

Task 11: Left Turn Delay Study Data Collection

The Consultant shall collect data necessary to perform Left Turn Delay Study, in accordance with the procedures outlined in the most current MUTS Manual.

Task Product:

- Electronic copies of the draft report and final report.

Task 12: Spot Speed Study Data Collection

The Consultant shall collect data necessary to perform a Spot Speed Study data collection, in accordance with the procedures outlined in the most current MUTS Manual. Data should be collected in one or both directions and must be in Excel format (date, time, speed).

Task Product:

- Electronic copies of the draft report and final report.

Task 13: Pedestrian/Bicycle Volume Count (Special Classification)

A pedestrian/bicycle volume count shall be made for a total of 8 hours encompassing the morning and evening peak traffic periods and/or the peak pedestrian/bicycle volume periods. This may include recording in 15-minute intervals with hourly totals. The 8 hours shall collect pedestrian and bicycle movements at a specific location or along a roadway segment. The location and limits of the segment to be observed will be determined by the DPM. All pedestrian and bicycles shall be counted and totaled by movement for each approach (crossing and parallel movements). The days on which the count is conducted shall be specified by the DPM, with typical traffic conditions.
A mid-block study will be counted and treated as one location. An intersection will be counted and treated as one location. Special classifications shall be recorded for each user counted as they apply, based on FDOT Traffic Engineering Manual categories. Special classifications include children, older adults, and pedestrians with physical disabilities. Judgment and care should be applied when estimating pedestrian categories. Children are generally under age 12 while older adults are typically 65 years or older.

Task Product

- Eight-hour pedestrian/bicycle volume count (with or without video)
- Aerial plan sheet with crossing count table(s)

- Electronic copies of the draft report and final report.

Task 14: Vehicle Gap Study Data Collection

The Consultant shall collect data necessary to perform Vehicle Gap Study in accordance with the procedures outlined in the most current MUTS Manual. The Vehicle Gap Study shall correspond to the study times of the Pedestrian Volume Count and Pedestrian Group Studies and shall be one hour in length on the same day or as specified by the DEPARTMENT project manager, with typical traffic conditions.

Task Product:

- Electronic copies of the draft report and final report.

Task 15: Pedestrian Group Size

A pedestrian group size study shall be made for a total of eight hours encompassing the morning and evening peak traffic periods and/or the peak pedestrian volume periods. A mid-block study will be counted as one location. An intersection will be counted and treated as one location.

Task Product:

- Eight-hour pedestrian group size study.

Task 16: Intersection Inventory (Condition Diagram)

The Consultant shall conduct a field inventory of each intersection under study and prepare a condition diagram on standard FDOT forms contained in the MUTS or in another format approved by the FDOT. Condition diagrams shall include lane assignments, left turn lane lengths, right-of-way, Americans with Disability (ADA) deficiencies, intersection geometry, all traffic control devices, and other roadway or roadside elements that contribute to the quality of intersection operation. This shall include but not be limited to pertinent features to traffic operations such as driveways, sidewalks, bicycle facilities, fixed objects, buildings, utility and signal poles, major underground utilities, stop bar placement, lighting, trees and shrubbery (if they affect visibility), whether there is a median or other type of separation, lines of sight, etc. The standard inventory distance from the centerline of the intersection will be 250 feet. However, when conditions relevant to the study occur outside this distance, those conditions should also be diagramed and distances noted. If the intersection is signalized, the head arrangement should be shown. The sketch should show whether the intersection is a "Tee" or a "Plus" type intersection, any offset, and the approximate skew if one exists.

To supplement the sketch, colored photographs shall be taken of each approach. The photographs shall show the lane configuration and stop bar and shall be

taken facing the approaching traffic. A minimum of one photograph shall be taken of each approach. More photos shall be taken if needed to show the physical conditions. Additional photographs shall be taken of any geometric, traffic, or traffic control aspects about which the District Safety Engineer should be aware.

Task Product:

- Condition diagram
- Color photographs

Task 17: Compile Traffic Operations/Safety Data

The Consultant shall obtain and compile traffic operations data from various databases and locations for incorporation into the Tracking Application. The application shall include study locations previously justified for future project implementation, completed safety projects, traffic service requests, Road Safety Audit locations/recommendations, traffic count data, transit data and crash data.

Task Product:

- Updated Tracking Application Database File – 8 hours

Task 18: Review of Additional Crash Reports

Each additional ten (10) crashes above the established base shall be considered one unit for purposes of establishing compensation.

Task Product:

- Crash analysis
- Collision diagrams

Task 19: Qualitative Assessment of Intersection Operation

A Professional Engineer of the firm shall visit the intersection under study during the morning and evening peak traffic periods, as determined from the 24 hour traffic counts and also during any period during which a problem was indicated by the work order. The engineer shall make qualitative assessments of intersection operation, particularly in terms of queue lengths, turning vehicle volumes, delays, safety, conflicts or any operational characteristics that should be considered in evaluating the need for a traffic signal or other improvements.

Colored photographs shall be taken of each approach. The photographs shall show the lane configuration and stop bar and shall be taken facing the approaching traffic. A minimum of one photograph shall be taken of each approach. More photos shall be taken if needed to show the physical conditions.

Additional photographs shall be taken of any geometric, traffic flow, safety or traffic control aspects about which the DPM should be aware. The Consultant shall recommend to the FDOT the need for appropriate supplemental work tasks.

Task Product:

- Assessment of intersection operation.
- Recommendation for supplemental work tasks.
- Color photographs of intersections

Task 20: Highway Lighting Justification

A highway lighting justification analysis shall be performed in accordance with the in accordance with the procedures outlined in the most current MUTS Manual and HSIP Guidelines.

The procedures outlined in Section 4 of the *August 2012 FHWA Lighting Handbook* should be followed to determine roadway lighting justification. For collectors, major arterials, and local streets, the warrant system is based on Transportation Association of Canada (TAC) Guide for the Design of Roadway Lighting. For freeways, bridges, and interchanges, the American Association of State Highway and Transportation Officials (AASHTO) Roadway Lighting Design Guide Warranting System is used. Per *FDOT Florida Design Manual, Section 7.3.3*, all interchanges on the interstate highway system shall be lighted. A warrant analysis may be required for federal funding but will not be used as the determining factor for the installation of lighting at interstate interchanges. Consistent with the *Florida Intersection Design Guide*, lighting is required at all roundabouts. Further, signalized intersections having marked crosswalks with pedestrian signals shall be lighted.

Task Product:

- Highway lighting justification report.

Task 21: Development of Alternatives and Recommendations

Using the products from other tasks in a composite study, the Consultant will develop and analyze feasible and appropriate alternatives, which address solutions to the defined problem(s). A minimum of three practical alternatives with benefit to cost analysis will be developed and analyzed for each composite study. If three practical alternatives do not exist, the Consultant shall make a statement to this effect. Based on this analysis the Consultant shall recommend one of the alternatives. This task is based on using a minimum of three other tasks, one of which shall be Task 6, Preparation of Reports.

Task Product:

- Development of alternatives
- Analysis of Alternatives

- Recommended alternative

Task 22: Safety Research

The Consultant shall assign one (1) staff person to work under the direct management and supervision of the DPM. This staff person shall be familiar with the design standards and the special computer programs as outlined in Section III. The Consultant staff shall perform field reviews; gather local crash data and research FDOT files and databases as required by the DPM. Research items can include safety concerns identified by management, citizen complaints, or the Community Traffic Safety Teams.

Task Product:

- Miscellaneous Assignments

Task 23: Safety Engineering Analysis

The Consultant shall review the crash data, perform field reviews, and meet with the local jurisdiction as necessary, and recommend safety improvements. A report will be prepared and signed and sealed by a professional engineer. The report shall be completed in accordance with the guidelines set forth in the HSIP Guidelines and/or at the direction of the DPM. The report will include location map, photographs, description of existing conditions, traffic volumes, constraints, limitations, summary of findings, condition diagrams, summary of crash data, collision diagrams, cost estimate, benefit cost analysis, and recommended method of future evaluation.

Task Product:

- Safety Engineering Analysis Report

Task 24: Post Construction Safety Evaluation

This Consultant shall compare crash data and conditions for the 3 years prior to the construction (report prepared by a previous assignment) to the 3-years post construction in the justification report to determine if there have been any reductions in the type of crash targeted for reduction or an overall reduction. The Consultant shall consider the increase to development in an area or changes to the AADT, as appropriate. The Consultant shall perform a field review and summarize the findings in a short narrative (normally one or two pages). The final report shall be signed and sealed by a Professional Engineer.

Task Product:

- Post Construction Safety Evaluation Report

Task 25: Graphics

The Consultant shall provide graphic displays to be used by the FDOT in hearings or meetings. Specific information required on the displays will be coordinated by the DPM. The displays would include board-mounted graphics (40” x 40” maximum) illustrating

project corridors, lists, tables, etc. The graphics shall be developed in a CADD or other approved electronic formats.

Task Product:

- Graphic displays

Task 26: Meetings

The CONSULTANT shall attend meetings to assist the DEPARTMENT in responding to safety issues. One senior level traffic engineer shall attend the meeting.

Task Products:

- Meeting attendance

Task 27: Property Owners Identification and Notification

The Consultant shall identify the current affecting property owners where median openings or existing traffic patterns are to be closed and/or modified. A letter will be prepared with proper back up material for signature by the appropriate FDOT official.

Task Products:

- Letter of Intent
- Drawings of existing/proposed conditions

Task 28: Construction Cost Estimate

The Consultant shall estimate the construction costs for the recommended improvements. Cost estimates shall be calculated using the most current publication of the FDOT's Transportation Costs. The costs estimates must be accepted by the District's Estimates Engineer. An electronic version of the Transportation Costs is available on http:/www.dot.state.fl.us/planning under Policy Planning.

Task Product:

- Construction Cost

Task 29: Evaluation of Crash Reduction Benefits

Using the HSIP guidelines, the Consultant shall quantify the annual cost saving associates with the crash that will be reduced by the proposed improvements. The crash reduction costs will be provided by the FDOT.

Task Product:

- Annualized cost saving from crash reduction

Task 30: Project Benefit/Cost Ratio and Net Present Value

Using industry standard Safety Benefit-Cost and Net Present Value calculation methodology, the Consultant will calculate B/C ratios & Net Present Values (NPVs) for an identified safety project as directed by the DPM. The purpose of the analysis is to determine eligibility of a proposed improvement to qualify for federal safety funding

under the HSIP. The FDOT will provide the service life values for the various improvement recommendations. This summary form will be made a part of the study report.

Task Product:

- Benefit/Cost ratio and NPV summary forms

Task 31: Technical Support to Community Traffic Safety Teams

The Consultant shall provide technical support to the CTSTs. This support may consist of analysis of traffic data to document local traffic safety issues. The Consultant shall help to produce the technical documentation including the graphic development (newsletters, brochures, charts, graphs, videos, power point presentations, publication books, and other items) to benefit the CTSTs in inform each county of traffic safety issues. The CTST website will also need to be maintained to support the safety function.

Task Product:

- Technical documentation used for engineering actions such as (newsletters, brochures, tip cards, bookmarks, charts, graphs, videos, power point presentations and other items to be developed)
- Web site update and maintenance

Task 32: Technical Crash Management Geographic Information System Support

With coordination and support from local agencies, the District has developed a district-wide Crash Data Management System (CDMS) using Geographic Information Systems (GIS). The Consultant shall provide technical support to the FDOT for maintaining, updating, and operating the system.

Task Product:

- 1-day technical support

Task 33: Crash Analysis

The Consultant shall analyze the crash data contained in the crash review and collision diagrams and identify abnormal crash characteristics or patterns. The Consultant will develop a list of possible causes for each abnormal crash pattern. These causes must be site specific, identified during field review of the location under study. The Consultant's engineer will quantify the abnormal crash history whenever possible using scientifically based methods such as expected value analysis, safety ratio, statewide crash rates, or other statistical method.

Task Product:

- Crash Analysis
- Abnormal Crash Characteristics/Patterns
- Possible Crash Causes for Each Abnormal Pattern

Task 34: Fatal Crash Review

The Consultant shall review fatal crash reports within the FDOT that happen on the state road system to determine if improvements can be made. On average there are about twenty (20) fatal crashes to review each month. Each crash location is reviewed and compared to see if it falls into a high crash spot or high crash segment or the latest District 7 Smart Goals report. The location is also checked for any recent or upcoming work to be done at the location. The disposition of fatal crash report form shall be filled out with this information and submitted to the DPM for signature and input into the Fatal Crash Review database.

Task Product:

- Disposition of Fatal Crash Form
- Fatal Crash Review Tracking Database

Task 35: Work Zone Safety Review

The Consultant shall review traffic safety within work zones to identify operational issues for vehicles and vulnerable road users and propose feasible countermeasures for implementation.

Task Product:

- Analysis report of traffic operational and safety issues within work zone operations and strategies to mitigate these issues.

Task 36: Level of Service Analysis/Optimization (Intersections)

Using the methodology of the Synchro, the Consultant shall determine the existing and proposed level of service for the existing conditions and the proposed improvement projects as directed by the FDOT. An operational analysis will be used for critical intersection(s). The results of this subtask may be included as an Appendix to the Study Report. Additionally, the Consultant shall optimize the signal timing for existing and proposed conditions.

Task Product:

- Level of Service for Existing and Proposed Conditions
- Summary of Proposed Recommendations

Task 37: Signalization Plan Sheet

The Consultant shall provide necessary engineering (including geotech, SUE, structure analysis) and drafting services required to prepare signalization plan sheet, which illustrate recommended improvements approved by the DPM. Plans shall conform to the latest FDOT standards and plans format and the desires of the FDOT as made known to the Consultant. The signalization plan sheet shall include a plan view, phasing, timings, notes, detector chart, signal head details, utilities, SOP, and tabulation of quantities. The plan view shall illustrate poles/mast arms, head arrangement, detectors,

pull boxes, etc.. Signalization shall be prepared on standard size (11" x 17") plan sheets in the appropriate English scale as determined by the DPM. Pay item numbers and tabulation of quantities shall be included. Plans shall be prepared using a CADD program (Microstation) that produces output files that are compatible with FDOT format. One copy of the output files will be delivered to the FDOT upon approval of the plans. Payment will be made per intersection.

Task Product:

- The Signal Plan Sheet
- CADD files in digital format

Task 38: Roadway Plan Sheet

The Consultant shall provide necessary engineering and drafting services required to prepare a Roadway Plan Sheet, which illustrate recommended improvements approved by the DPM. Plans shall conform to the latest RRR standards and the desires of the Department as made known to the Consultant.

Roadway Plan Sheet for improvements to intersections or roadway length segments shall be prepared on standard size (11" x 17") plan sheets in the appropriate English scale as determined by the DPM. Typical improvements to be shown shall include, but not be limited to the following: pavement widening, signing, markings, median modifications, turn lanes, sidewalks, tabulation of quantities and interconnect cable runs. Payment will be made per plan sheet.

Plans shall be prepared using a CADD program (Microstation) that produces output files that are compatible with DEPARTMENT format. One copy of the output files will be delivered to the FDOT upon approval of the plans.

Task Product:

- The Reproducible Roadway Plan Sheet
- Three copies of the Roadway Plan Sheet
- CADD files on CD/USB

Task 39: Contract Plans Package

The Consultant shall provide the following additional design items required for a contract plans package: key sheet, quantity sheet or computations book, general notes, construction cost estimate, and two (2) detail sheets as required. These items are supplemental to the Signalization Plan Sheet and the Roadway Plan Sheet. Plan sheets will be prepared on (11" x 17) sheets and in accordance with FDOT CADD and plans format.

Task Project:

- Complete Plans Package

Task 40: Safety Review for Design Plans

The Consultant shall review design plan sets or major study reports that are submitted to the FDOT in the Electronic Review Comment (ERC) system. The design plan sets or major study reports shall be reviewed for safety deficiencies or where safety may be improved. Comments and responses for design plans shall be entered electronically into the ERC system by assigned deadline. Typically, this constitutes approximately ten (10) plan sets to be reviewed per month.

Task 41: Maintenance of Traffic Plans Review and Safety Analysis

The Consultant shall review draft Maintenance of Traffic plan sets provided by the DPM and make comments and recommendations to improve overall safety, clarity in signing and pavement markings, safety of the phasing plan.

Task Product:

- Review comments and recommendations for Maintenance of Traffic plan set.

Task 42: Safety Assessment Report (SAR)

The Consultant shall compile the necessary support material for conducting the Road Safety Audits based on FHWA guidelines. The support material consists of three years of the most recent traffic and crash data, obtain signal timings if applicable, Straight-line diagram information, work program information, aerial photography, and other necessary items that would be helpful in performing the Road Safety Audit. The Consultant shall also have a team leader that has FHWA training certification to act as the team leader in performing RSAs. The Consultant shall track the actions for RSA recommendations in the tracking database. Additional information may be collected and analyzed in the RSA to support addressing a specific safety emphasis area or unique pattern at a specific location as directed by the DPM.

Task Product:

- RSA Report
- RSA Tracking Database

Task 43: Traffic Operations/Safety Tracking Application Development

The Consultant shall create a comprehensive geographic database of traffic operations/safety activities to include all relevant data related to an inventory of existing roadway conditions, study locations previously justified for future project implementation, completed safety projects, traffic service requests, Road Safety Audit locations/recommendations, traffic count data, transit data and crash data. The database shall be created in a way that allows FDOT staff to access and query the data/data layers

at any time based on geographic information (i.e. FDOT Roadway Number and Mile Post). The database shall have the capability to display features geographically in an ArcGIS map-based environment. The level of detail in each data layer and the level of GIS-related functionality required shall be at the discretion of the FDOT project manager. FDOT staff shall have the ability to export the full database in its entirety at any time (with or without associated attachments).

Task Product:

- Traffic Operations/Safety Tracking Application

Task 44: Safe Routes to School Project Review

The Consultant shall review Safe Routes to School (SRTS) applications using the national SRTS ranking guidelines and submit a ranking order sheet to the FDOT. SRTS projects shall be ranked for priority. Feasibility studies for each of the qualifying schools will also be performed on potential projects. For example, projects will be evaluated to see if the proposed improvements can be constructed within existing right-of-way since SRTS funding cannot be used to purchase right-of-way. The projects will be added into a tracking database with the essential project information.

Task Product:

- SRTS Project Ranking
- SRTS Feasibility Studies
- SRTS Tracking Database

Task 45: Safety Improvement Report (Intersection or Segment)

The Consultant shall review, summarize, and analyze all available data and information in order to develop a plan of coordinated safety improvement recommendations at a specific intersection or roadway segment. Recommended improvements shall consider all relevant corridor elements and shall be directed at improving safety and achieving a context sensitive roadway. The improvement plan should include:

- Consideration of the unique needs and behaviors of pedestrians, bicyclists, and motorists
- Consideration of transit operations (if applicable) and opportunities to improve access to transit service for pedestrians and cyclists
- Extra emphasis should be given to improvements aimed at generating a safety and operational benefit for multiple modes of transportation.
- Extra emphasis shall be placed on generating recommendations addressing all aspects of safety: engineering and physical improvements; education/public outreach; law enforcement needs; and encouragement/behavioral incentive opportunities

- Unique corridor elements or patterns that may influence multi-modal activity including surrounding land use and urban form
- Emphasis on short-term improvements that can be completed with minimal effort. Recommendations for major construction alternatives should be proposed only when other less intensive alternatives are not likely to generate a significant impact to safety.
- Consider and document any potential impacts to access management.
- Emphasis should be given to those projects having high benefit to cost ratios and net present value.
- Implementation of the FDOT Complete Streets Policy

Task Product:

- Safety Improvement Report documenting conceptual recommendations for safety improvements

Task 46: Safety Improvement Implementation Plan (Intersection or Segment)

The purpose of this task is to complete a feasibility review of one or more proposed safety improvement concept(s) and prepare an action plan for implementation. The proposed safety improvement concept(s) will not be generated by the Consultant as part of this task and may be prepared under a separate task or provided to the Consultant by the DPM. Each proposed improvement shall be categorized and assigned an implementation strategy as part of a supplementation Safety Improvement Implementation Plan. The Improvement Plan shall include the following:

- Improvement/project delivery method (for engineering improvements only)
- Consideration of time frame required for implementation of each task
- Estimated costs to implement each recommendation (using FDOT LRE if applicable).
- Responsible agency or District representative(s) for implementation of each strategy
- Calculation of benefit to cost ratios and/or net present value calculations as directed by the DPM.
- Overall policy and organizational recommendations and opportunities to address unique issues (if applicable)
- Recommendations for more detailed studies related to a specific recommendation or issue

Task Product:

- Implementation Plan documenting key information needed to assist District staff in programming implementation of recommendations.

Task 47: Highway Safety Manual Project Analysis

The Consultant shall be familiar with the Highway Safety Manual (HSM) as published by the American Association of State Highway and Transportation Officials. The HSM provides analytical tools based upon accepted knowledge, methods, and process in a form that is usable by individuals with a variety of professional and technical backgrounds, including engineering, planning, environmental, field operations, enforcement, and education. Based on the HSM and calibrations factors, the Consultant shall conduct a Highway Safety Manual program briefing for transportation executives and professionals in engineering, planning, environmental assessment, field operations, enforcement, and education. The Consultant shall also be able to use HSM approach of predicting the safety performance to analyze suitable projects and deliver the recommendations.

Task Product:

- HSM Project Analysis & recommendations
- Conduct briefing

Task 48: Safety Program Briefing

The Consultant shall assist with providing safety program updates to specialized groups. These may pertain to pedestrian safety, highway safety, MUTCD updates, or other technical focus areas.

Task Product:

- Program Outline
- Presentation Materials
- Graphics
- Conduct Briefing

Task 49: Technical Support to Local Agencies

The Consultant shall serve as a liaison to local agencies within District Five and provide technical support in the development of off-system safety program candidates as Local Agency Program (LAP) projects. The Consultant shall provide technical assistance to local agencies to identify potential Off-System Safety Program activities and to conduct benefit-cost analysis consistent with FDOT procedures. The Consultant will review the crash history provided by the local agencies and develop a benefit/cost ratio for the candidate projects. The Consultant shall develop Benefit-cost ratio / NPV justification report for each candidate project. The Consultant shall develop and submit to DPM in evaluating Off-System Safety Program candidate projects. The results of this evaluation, the Consultant will coordinate with the local agencies to identify which projects can

meet the funding requirements of the Off-System Safety Program. The Consultant shall establish, maintain tracking and monitor systems for Off-System Safety Program project deployment, costs and crash modification.

Task Product:

- Crash Analysis
- Off-System Safety Program Benefit/Cost Justification Reports
- Off-System Safety Program Tracking Database

Task 50: Lane Repurposing Alternative Analysis & Evaluation

The Consultant shall evaluate safety and operational impacts of lane elimination alternatives utilizing the methodology in the Statewide Lane Elimination Guidance. Evaluation should consider safety, traffic operations, pedestrian and bicycle activity, access management, impacts to transit and parking (if-applicable), and other factors as determined by the DPM. The Consultant shall model performance and determine whether a lane elimination is operationally feasible at the proposed location and if a safety benefit (crash reduction, etc.) will be realized. The Consultant may be required to project future design hour and design peak hour traffic volumes using travel demand models (FSUTMS), historical traffic growths, land use data or other appropriate traffic forecasting methodologies, and model operational and level of service performance of future year conditions as part of this analysis at the discretion of the DPM.

Task Product:

- Final Report and Recommendation(s) and supporting technical documentation

Task 51: Innovative Intersection Alternative Analysis (Intersection Control Evaluation)

Under this task the Consultant shall evaluate any and all operational impacts and anticipated safety benefits of implementing a proposed innovative intersection design at a specific location. The location and proposed alternative concept(s) shall be provided by the DPM. The evaluation shall include a review of data provided by the DPM and may include turning movement counts, pedestrian/bicycle data, crash reports, transit data, and other relevant information. Innovative intersection designs include but not limited to displaced left-turn intersection, median u-turn intersection, restricted crossing u-turn intersection, quadrant roadway intersection, roundabout, diverging diamond interchange, and a jug handle intersection. The Consultant shall perform operational and capacity analysis using the latest version of SIDRA (or a similar software package agreed upon by the DPM). The Consultant shall generate operational simulation using the latest version of VISSIM (or a similar software package agreed upon by the DPM and the Consultant Project Manager). This task includes coding of the network, including distances between intersections, geometrics, volumes, timings and any other necessary

data for three time periods for an existing and up to two proposed conditions. Payment will be per intersection. Turning movement counts will be furnished by the DPM.

Task Product:

- Alternative Intersection Analysis Report
- SIDRA (or alternative software) electronic files
- VISSIM (or alternative software) electronic files
- Intersection, approach, and movement LOS, delays and queue lengths

Task 52: Safety Project/Program Management Support

Under this task the Consultant provide for on-call/In-house Project Manager level staff to assist with implementation of proven safety countermeasures and projects/programs addressing critical district safety emphasis areas as assigned by the DPM, such as Bicycle/Pedestrian, Wrong Way Driving, etc. This task may include work elements including Work Program coordination, public information coordination regarding safety projects, and project management of safety projects (including LAP or Design Build Push-Button), and specialized program management technical support. Payment shall be made at the field rate during the time worked in-house by the staff member.

Task Product:

- In house support – 1day (8 hours)

TASK 53: Safety Improvement/Work Program Project Scoping Support

The Consultant shall provide for on-call/In-house Project Manager level staff to participate in District scoping process for work program projects for the purpose of recommending opportunities for incorporation of safety projects/elements into various work program projects (such as resurfacing). This task requires frequent communication and coordination with FDOT staff and may require conducting site visits, completing reviews and analysis of crash reports and safety data, summarizing crash patterns, participating in and reviewing Road Safety Audit/Safety Assessment Reports prior to scoping, evaluating feasibility and constructability of proven safety countermeasures and improvement recommendations, contributing to project design and construction scopes of work, following up with district project managers on incorporation of safety elements into existing work program projects. A high level of understanding of the FDOT work program, District Seven project scoping process, fund codes/types, federal-participating work items, safety benefit-cost/net present value calculations, state and local safety emphasis areas, and proven low-cost safety countermeasures is required for this task. Payment shall be made at the field rate during the time worked in-house by the staff member.

Task Product:

- In house support – 1day (8 hours)

Task 54: Vision Zero Technical Support

The Consultant shall provide a study to identify and propose solutions to reduce all types of vehicle and pedestrian crashes that result in severe injuries and fatalities. This task will include the identification of engineering strategies, educational outreach, and opportunities to work with law enforcement agencies, emergency medical services, and other stakeholders, as well as additional efforts to implement these strategies.

Task Product:

- Report and support for proposed crash reduction strategies.

Task 55: Speed Management Strategies

Under this task the Consultant shall identify, evaluate, and propose speed management strategies adapted to the needs of the Tampa Bay region. This task requires evaluation of existing practices and identifying opportunities for enhancement of industry practices on speed management from resources such as the US DOT, FHWA, NHTSA, AASHTO, Vision Zero Network, AAA, IIHS, ITE, and others. This task will also include evaluation of practices and policies related to context classifications, such as the FDOT Complete Streets and intersection spacing guidance that would work toward this goal. It involves working with State, County, and City officials on current practices in speed setting, planning, engineering, enforcement, and public education/communication practices.

Task Product:

- Summary of an evaluation and recommendations for speed management strategies for locations requested.

Task 56: Autonomous and Connected Vehicle Technology

The Consultant shall be knowledgeable on new or upcoming vehicle technologies, and shall identify safety concerns and/or provide associated design recommendations in response to these technologies. The scope and locations shall be identified by the DPM. Such vehicle technologies include Connected Vehicles, Vehicle to Infrastructure, and Vehicle to Vehicle technologies. Examples of references include the USDOT Automated Driving Systems: A Vision for Safety 2.0 and the USDOT Vehicle Performance Guidance for Automated Vehicles.

Task Product:

- Analysis report on anticipated or actual safety and operational issues related to upcoming vehicle technologies.

Task 57: Aerial Videography/Photography Technical Support

The Consultant shall collect aerial photos and videos requested by the DPM for the assessment of safety, operational, or maintenance needs through the use of drones or similar technology.

Task Product:

- Aerial photos and/or videos.

Task 58: Preparation and Submission of Report

The Consultant shall document the results and recommendations from all tasks in a Composite Study in a bound, written report or digital package. The report will include a benefit cost analysis.

Task Product:

- Digital or hard copy of the study report that is signed, sealed and dated, and all final work.

STUDY TYPE VII: FHWA 5% Report Reviews and Crash Location Update

The Consultant shall review the Yearly FHWA 5% Report from the FDOT's mainframe database found in the Master Applications Menu in TSO. Locations will be reviewed in accordance with the HSIP Guidelines and District instructions. The Consultant will study segments that have not been reviewed in the last three (3) years and are not in the current work program. However, the Consultant will note in the database the reason a particular location is being excluded from review during this cycle. Interstate locations are to be excluded from study at this time.

At a minimum, for each location studied the Consultant will review the most recent 3-years of crash history, FDOT roadway information contained within the FDOT's mainframe programs, the FDOT's Traffic Operations files (if necessary), and the FDOT's roadway photo images. The Consultant shall provide, in color, roadway photo images representative of the area reviewed. The Consultant will document the findings on the Crash Summary Tabulation and appropriate High Crash Form. A professional engineer will make recommendations on the High Crash Form.

When a correctable crash pattern is identified, the Consultant shall prepare recommendations and submit to the District Safety Engineer. When the Consultant feels a field review is required, the Consultant will get approval from the District Safety Engineer prior to the review.

The Consultant shall use the database created for the Yearly FHWA 5% Report and update the database with each New Year of data. The database will be used by the Consultant to document the findings and disposition of all locations on the current year's FHWA 5% Report listings.

The database shall be provided to the FDOT and become the property of the FDOT after completion.

All crash data related to the FHWA 5% Report shall be retrieved from the FDOT's crash database and entered into the Crash Summary Form provided by the DPM. The Consultant shall summarize the reviews in the appropriate Access database form provided by the DPM. The Consultant shall generate a report that summarizes critical review elements as requested by the DPM.

Task Product:

- High Crash List Report Reviews
- Crash Summaries (for all locations reviewed)
- Collision Diagrams (as necessary)
- Color photographs representative of area reviewed
- Database Report of Disposition of all locations in yearly review

Study Type VIII: Miscellaneous District Wide Safety Studies

To be negotiated and scope as needed. This study type is to allow for special studies to be performed as needed.

Task Product:

- To be determined by DPM.

Items to be furnished by the FDOT

Any or all the following items as appropriate, for performance of the required services:

- All previously completed field surveys as required.
- All available subsoil data and tests for roadway and structure foundations.
- All available roadway plans, bridge plans, right-of-way maps, studies and other available information pertinent to the project.
- All available traffic information.
- Right-of-way maps and legal descriptions that are not part of the CONSULTANT's work effort, when required.
- Utility and railroad contacts and agreements.
- Numbered standard survey books for survey data when survey services are required.
- Pavement Design where necessary.
- Coordination and processing of all permit applications.

4. Bicycle and Pedestrian Coordination

The Consultant shall support the development of a comprehensive district bicycle and pedestrian program to implement goals for the safety and mobility of people walking and biking and integrate pedestrian and bicycle modes into all aspects of the project life cycle.

The Consultant shall provide bicycle and pedestrian technical analyses, including data collection, crash evaluation, problem identification, and development of countermeasures based on a comprehensive approach of engineering, education, enforcement, encouragement, and equity.

Support data collection, to influence safety culture efforts, including but not limited to exposure data, operating conditions, before and after data for safety installations, behavioral data, and other relevant aspects of human behavior.

Coordinate with the FDOT Central Office on mapping and the development of tools to support proactive decision making in the systematic safety analysis of bicycle and pedestrian safety improvements.

Support District staff with safety outreach and communication with external partner agencies and the public regarding safety education events, new traffic safety devices, outreach regarding specific safety issues and countermeasures, and communication of safety related initiatives.

Support District staff with coordination across internal FDOT departments and with external partner agencies, special interest groups and engaged citizens using context appropriate techniques and methods.
Support District staff with technical consultation tasks and possess sufficient engineering, planning, and design knowledge regarding multimodal safety to thoroughly represent the needs and characteristics of the modes.

Conduct public outreach, workshops, informational meetings representing the Department to assist staff to convey technical information in plain language.

Support with audio visual production of videos, sound, PowerPoint presentation, graphics, display and exhibit preparation, and website development.

C. CONSULTANT REPSONSIBILITIES

The following procedures are general for all tasks. One or more of them may be necessary depending on the scope of the task. The Consultant shall both prepare and participate in the presentations, meetings, and workshops. This task includes delivery of presentations, save-the-date invitations and/or notifications, providing support staff and/or equipment, room set-up and take down, meeting analysis, and documentation. Preparation of speaker notes, and presentation materials will be conducted in this subtask.

The following Consultant responsibilities will apply to various activities of this contract:

1. Coordination

Interaction between FDOT and agencies/stakeholders is essential to reach Vision Zero. Shall support FDOT staff with meetings or forums, as necessary.

The Consultant and the DPM shall meet prior to any meeting or forum to determine the type of materials that are appropriate to be developed.

It shall be the responsibility of the Consultant to make all arrangements for the location of the meetings or forums. It is also the responsibility of the Consultant to determine that the site is suitable to accommodate participants and properly provides for the disabled. All rental and custodial fees shall be paid for by The Consultant.

2. Authorizations

All materials (including presentations, format for all displays and handouts, speaker notes, and graphics), media releases, invitations, save-the-dates, and general correspondence shall be reviewed and authorized by FDOT prior to distribution.

3. Notification

The Consultant shall identify a cost-effective method(s) of announcements to agency/stakeholders to maximize participation at workshops, forums, and information meetings. This may include traditional or non-traditional methods

such as direct mail, public service announcements, TV/radio/print news stories and/or social media. When determined by FDOT, notifications shall be made to elected officials and appointed officials, and other interested parties by letter. FDOT will review the letters prior to the mail out. The Consultant will be responsible for the postage and mailing. The Consultant will develop and maintain a data base for notifications to partner agencies/private agencies.

4. Method for Promoting Events, Workshops, & Information Meetings

All media forms, including newspapers, social media, electronic mail, television, and radio may be utilized through news releases, paid and free advertising, and interviews to inform the public. FDOT shall be consulted for guidance prior to the development of any releases. Releases shall be prepared and submitted to FDOT for review and approval. Sufficient time, a minimum of three weeks, must be provided for FDOT to review.

5. Summary, Minutes, Action Items, Follow Up

Minutes/summaries of all meetings, including action and follow up items, will be recorded and prepared by The Consultant and delivered to FDOT's Task Manager within one week. Addressing questions/requests for information and responding to them are also integral parts of the meeting process. The Consultant shall participate in letter writing, distribution of news releases, or other appropriate tasks as deemed necessary. All letters from the public, elected officials, etc., shall be responded to by the Consultant within two weeks. FDOT shall review and approve all responses prior to mailing.

6. Record of Activities

An accurate record shall be maintained of all activities from meetings. The record will consist of at least the following particulars.

- Date
- Time
- Location
- Contact information for all the participants
- Purpose of the meeting
- Synopsis of the meeting

- Meeting notes with relevant information
- Spokesperson (include their name, contact information, and position within the group)
- Materials distributed

D. REQUIREMENTS AND PROVISIONS FOR WORK

1. Project Schedule

Within five (5) working days after each Task Work Order, The Consultant shall provide a schedule of calendar deadlines addressing all components of the task.

2. Key Personnel

The Consultant's work shall be performed and directed by the key personnel identified in the proposal presentation by The Consultant. Any changes in the indicated personnel shall be subject to review and approval by FDOT. The Consultant shall provide resumes for proposed staff for DPM approval.

The prime Consultant must have at a minimum, one task lead employee with a minimum of four years FDOT transportation experience, knowledgeable in Federal, State, and Local Agency standards, policies, and procedures.

The Consultant must have the knowledge, experience, and ability to independently develop various types of agency/stakeholder outreach materials, meetings, and forums with minimal direction from FDOT.

The Consultant must have the ability to speak knowledgeably about all modes of transportation safety in a clear, concise, and simple manner. The Consultant must have the ability to handle questions from the public.

3. Progress Reporting

The Consultant shall meet with FDOT monthly and provide written progress reports which describe the work performed on each task. Progress reports shall be delivered to FDOT concurrently with the monthly invoice. Judgement on whether the work of sufficient quality and/or quantity has been accomplished will be made by the Task Manager by comparing the reported percent complete against the actual work accomplished.

4. Quality Assurance

The Consultant shall be responsible for the professional quality, technical accuracy and the coordination of all materials and services furnished by The Consultant under this contract. The Consultant shall, without additional compensation, correct or revise any errors or deficiencies in its materials and services. The Consultant shall be responsible, without additional compensation, for all errors, and/or omissions (and approved corrections of the same) that result from said firm's substandard performance of the services described herein.

5. Point of Contact

The FDOT and The Consultant will designate a lead point of contact who shall be the representative of their respective organizations for each task. The final direction on all matters of this contract remains with the DPM.