EXHIBIT A

SCOPE OF WORK

TRAFFIC OPERATIONAL PLANS PREPARATION AND STUDIES

I GENERAL REQUIREMENTS

The purpose of this contract is to provide the DEPARTMENT with professional services for conducting needed traffic operational plans preparation, traffic operational safety studies, and other services. The subsequent analysis and conceptual recommendations produced by the CONSULTANT will be used in the CONSULTANT'S development of construction plans, incorporated into traffic operational/safety improvement projects to be included in the DEPARTMENT'S work program, or in the case of traffic signal timing plans, be implemented directly into the field by the CONSULTANT.

The primary role of the Districtwide Traffic Operations Minor Design Consultant Services contract is to provide the Department with professional services that develop condensed design plans which support the existing Push Button construction contracts to include installing new traffic signals, traffic signal modifications, constructing turn lanes, median modifications and addressing minor safety concerns on the state highway system. The Push Button Program provides an expeditious and timely method of responding to these type of operational intersection concerns. By having existing design and construction contracts in place, it greatly reduces the time to design, construct and fully implement operational and safety improvements. The CONSULTANT coordinates with other FDOT departments, local agencies, utility owners, permitting agencies and the construction contractor to ensure the most beneficial improvement project for all roadway users.

Independent study types have been identified and work tasks for each have been specified. The CONSULTANT shall be aware that multiple Work Orders can be open concurrently. 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.

The CONSULTANT shall return a task schedule and price estimate within two (2) weeks from the receipt of the formal written request, emailed by the DEPARTMENT, for each proposed Work Order assignment.

Acronyms: DTOE **D**istrict **T**raffic **O**perations **E**ngineer

MUTCD	**M**anual of **U**niform **T**raffic **C**ontrol **D**evices.
MUTS	**M**anual of **U**niform **T**raffic **S**tudies published by the Bureau of Traffic Operations, Florida Department of Transportation
HCM	**H**ighway **C**apacity **M**anual
HSIPG	**H**ighway **S**afety **I**mprovement **P**rogram **G**uide

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 DEPARTMENT.

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 the Standard Consultant Agreement. Firms selected for subcontracts must be approved in writing and qualified by the DEPARTMENT 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.

Beginning and Length of Services

Services to be provided by the CONSULTANT under this agreement will be initiated and completed as directed by the DEPARTMENT on each study type or task assigned under this agreement.

Individual projects in the consultant contract will be assigned specific time restraints that will be met by the consultant. The consultant will submit a work schedule showing key phases which will establish the time restraints agreed upon at the time of fee approval. A time extension will be an exception to the specific restraints and will only occur if the delay is caused by the Department, not the CONSULTANT.

The DEPARTMENT shall furnish to the consultant a letter of authorization specifying the work to be done and the fees to be paid for each project assigned under this agreement. No work shall be commenced by the consultant until receipt of a Letter of Authorization.

Issuance of Work Orders

Authorization to perform one or more of the tasks described in this scope of services shall be conveyed to the CONSULTANT through a written work order (email) issued by the Design Project Manager. The maximum for any single issuance is $300,000. The work order shall specify the task to be conducted with a brief description; the location and project limits of each area; the desired tasks within the composite task; the date on which each task is to be completed and submitted to the DEPARTMENT. Each work order issued by the Design Project Manager shall serve as formal notice to proceed, effective on the date of the work order or on a subsequent date, if specified.

Invoicing

The CONSULTANT shall submit to the DEPARTMENT, via the Consultant Invoice Transmittal System (CITS), at the end of each month an invoice for each completed task, 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 a total invoice amount. Upon approval and acceptance of all procedures for a study type or products for individual study tasks, the Project Manager shall recommend payment for further processing with the DEPARTMENT.

Monthly, at the time of invoicing, the CONSULTANT shall submit to the DEPARTMENT a status update for each ongoing task work order. This shall be in spreadsheet format with each task work order listed including the percentage complete along with any necessary updates on subconsultant tasks as well as, but not limited to, the project schedule. This information will be used to control invoicing. Payments will not be made that exceed the percentage of work for any event on any task until those events have actually occurred and the results are acceptable to the DEPARTMENT.

Project Cost Accounting

Although the Consultant is assigned work by Task Work Order and each Task Work Order is assigned in a single general financial project identification number for billing purposes, the Consultant and its subconsultants shall have staff performing work on this contract charge their time to the nearest quarter hour to each specific project on which work is being performed. The Department shall provide the Consultant and its subconsultants the eleven digit project number assigned to each specific project in which the Department requires the Consultant to capture time and cost. At any given time, there may be several specific projects in which staff would be charging time. The Consultant shall provide the Department with each invoice the cost incurred for each specific project. Time expended by accounting personnel of the Consultant in preparation of invoices associated with this contract is an unallowable direct project cost.

Preliminary Report

All tasks requiring a report shall have a preliminary report submitted to the Project Manager prior to the submittal of the Final Report. The Project Manager shall review and comment upon the Preliminary Report and return comments to the CONSULTANT. The Final Report will reflect the comments of the Project Manager.

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 reports (and copies) submitted to the Project Manager shall be signed, sealed, and dated by a Florida Registered Professional Engineer of the CONSULTANT (including all subcontracted work).

Use of Department's Computers

The CONSULTANT will be allowed remote access to the DEPARTMENT'S Mainframe Computer for any work under this contract.

II INDEX OF STUDY TYPES

This scope of work contains four (4) 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 (Intersection)
- Task 3 - 8-Hour Turning Movement / Pedestrian Count
- Task 4 - Field Intersection Inventory (Condition Diagram)
- Task 5 - Intersection Delay Analysis (Side Street Approaches / Left Turns off Main)
- Task 6 - Collision Analysis
- Task 7 - Warrant Analysis, Conclusions and Recommendations

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 - Improvement Recommendations

Study Type III - Arterial Study
- Task 1 - Field Inventory
- Task 2 - Collision Analysis
- Task 3 - Corridor Review Checklist
- Task 4 - Improvement Recommendations
  - Sub-Task 4A - SYNCHRO 8.0 Analysis/ SIMTRAFFIC
  - Sub-Task 4A.1 - Additive (Additional Intersection)
  - Sub-Task 4A.2 - Additive (Additional Timing Plan)
- Task 5 - Access Management Review
- Task 6 - Preparation and Submission of Report

Study Type IV - Composite Study (each of these studies is requested separately).
- Task 1 - 8-Hour Turning Movement / Pedestrian Count
- Task 1A - Additive (Additional Person)
- Task 2 - 12-Hour Turning Movement / Pedestrian Count
- Task 2A - Additive (Additional Person)

Task 3 - 4-Hour Turning Movement / Pedestrian Count
Task 3A - Additive (Additional Person)
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 (Bidirectional)
Task 7A - Additive (Additional Count Stations)
Task 8 - Intersection Delay Analysis (Side Street Approach / Left Turns off Main)
Task 9 - Intersection Delay Analysis (One Approach)
Task 10 - Pedestrian Volume Count
Task 11 - Pedestrian Group Size
Task 12 - Vehicle Gap Size
Task 13 - 8-Hour Bicycle Count
Task 14 - Field Intersection Inventory (Condition Diagram)
Task 15 - Collision Analysis
Task 15A - Researching Crash Report Forms
Task 16 - Travel Time and Delay Study (One Arterial)
Task 16A - Additive (Additional 2-Hour Study Period)
Task 17 - Qualitative Assessment of Intersection Operation
Task 18 - Traffic Conflicts Study
Task 19 - Development of Alternatives and Recommendations
Task 20 - Preparation and Submission of Conceptual Report
Task 21 - Field Survey for a Signal Design
Task 21A - Field Survey for a Roadway Design
Task 22 - Traffic Signal Optimization
    Sub-Task 22A - Intersection Timing Plan
    Sub-Task 22A.1 - Additive (Additional Intersection)
    Sub-Task 22B - System Timing Plan
    Sub-Task 22B.1 - Additive (Additional Intersection)
    Sub-Task 22C - Traffic Responsive Settings
    Sub-Task 22C.1 - Additive (Additional Subsystem)
    Sub-Task 22D - Timing Implementation
    Sub-Task 22D.1 - Additive (Additional Intersection)
Task 23 - Spot Speed Study
Task 23A - Additive (Additional Location)
Task 23B - Additive (Speed Zone Study Report)
Task 24 - Left Turns by Cycle
Task 25 - No-Passing Zone Study
Task 26 - Roadway Signing Inventory
Task 27 - School Zone Inventory
Task 28 - Warrant Analysis, Conclusions and Recommendations
Task 29 - Public Information Meeting
Task 30 - Construction Plans
Task 30A Signalization Design (diagonal span, typ.)
    Sub-Task 30A.1 - Box Overhead Design
    Sub-Task 30A.2 - Mast Arm Design
    Sub-Task 30A.3 - Pedestrian Features

Task 30B Roadway Design (single turn lane, typ.)
- Sub-Task 30B.1 - Additional Turn Lane
- Sub-Task 30B.2 - Median Modification
- Sub-Task 30B.3 - Loops and Loop Lead-ins
- Sub-Task 30B.4 - Minor Drainage Design

Task 30C - Geotechnical Services
- Sub-Task 30C.1 - Additional Geotech Design Services

Task 30D - Structural Design Services
- Sub-Task 30D.1 -Additional Structural Design Services

Task 31 - Composite Combination 1
Task 32 - Composite Combination 2
Task 33 - Composite Combination 3
Task 34 - Composite Combination 4
Task 35 - Composite Combination 5
Task 36 - Composite Combination 6
Task 37 - Highway Lighting Justification
Task 38 - Isolated Traffic Hazard Study
Task 39 - Arterially Related Traffic Hazard Study
Task 40 - Area Wide Specific Type Hazard Study
Task 41 - Benefit-Cost Analysis
Task 42 - Subsurface Utility Exploration Service
- Sub Task 42A - Additional Pole Location
- Sub Task 42B - Concrete/Asphalt Removal and Restoration
- Sub Task 42C - Night Work Per Pole Location
- Sub Task 42D - Off-Duty Police Officer On-Site Per Pole Location
- Sub Task 42E - Arrow Board (Trailer) Per Pole Location
- Sub Task 42F - Flagman Control Per Pole Location

Task 43 - Development of Community Awareness Plan (CAP)
Task 44 - Miscellaneous Items

III 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 unit of payment for each work task is 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.

Supplemental Work Tasks are set forth in Study Type IV, Composite Studies, and may be used in conjunction with Study Types I, II, and III. Study Type IV, Composite Studies, may be authorized by the DTOE for the CONSULTANT to perform as independent work tasks. Payment for Supplemental Work Tasks is in addition or independent to the payment for the Study Types I, II, and III.

STUDY TYPE I: SIGNAL WARRANT ANALYSIS

1. Purpose

This study is intended to provide a specific determination as to whether or not 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 Design Project Manager 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 tasks authorized by the Design Project Manager.

3. Period of Performance

The normal period of performance allowed for completion of a Signal Warrant Analysis shall be two (2) weeks for a single intersection, with an additional week for every two additional intersections to be studied. The DEPARTMENT 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, the products and reports to be developed by the CONSULTANT and delivered to the DEPARTMENT 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 also 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.

Color 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 any specific deficiencies or unusual conditions needing to be repaired or maintained.

Additional photographs shall be taken of any geometric, traffic, or traffic control aspects about which the Design Project Manager should be aware.

The CONSULTANT shall recommend to the Design Project Manager the need for supplemental work tasks prior to commencing work on such Tasks.

Task Product: Assessment of intersection operation.
Photographs of intersection on CD.

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 which produces a written record of the traffic volumes by time of day. This record may be produced 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. Volume counts shall also be presented in a graphical format showing the volume by time of day. Additional 24 hour counts may be authorized for additional approaches by the DTOE as a supplemental activity to this study. Price shall be as quoted in the price summary sheet for Study Type IV, Task 5.

Task Product: 24 hour traffic counts

Task 3: 8-HOUR TURNING MOVEMENT / PEDESTRIAN COUNT

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 which 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. Vehicles must be counted by personnel. They shall use electronic turning movement counter boards and must record separately the number of pedestrians and commercial vehicles.

Task Product: Eight-hour turning movement volumes, all vehicles.
Eight-hour pedestrian volumes.
Eight-hour commercial turning movement volumes.
A CD containing the eight-hour turning movement count files in TMC format.

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 Department forms contained in the Manual on Uniform Traffic Studies or in another format approved by the DEPARTMENT. Condition diagrams shall include intersection geometry, dimensions, all traffic control devices, posted speed limit on each approach, 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, fixed objects, building, utility and signal poles, lighting, etc. Additionally, a speed study shall be conducted and reported at unsignalized intersections, with the study consisting of reporting the speed of at least one hundred (100) vehicles traveling in each direction on the main street.

Task Product: Condition Diagram

Task 5: INTERSECTION DELAY ANALYSIS (Side Street Approaches and Left Turns Off of the Main)

An intersection delay analysis of the side street approaches and left turns off the main street shall be made for a total of the three hours encompassing the morning, afternoon and off-peak traffic periods as determined from the turning movement counts. This study shall be performed in accordance with the Manual on Uniform Traffic Studies (MUTS Manual), Chapter VI, 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 60 seconds for any 15 minute period, then the form for Warrant II, Interruption of Continuous Traffic, shall be completed.
Task Product: Intersection delay analysis.

Task 6: COLLISION ANALYSIS

The CONSULTANT shall provide copies of traffic collision records to the DEPARTMENT and shall prepare a collision diagram for the intersection under study. The diagram shall depict as a minimum the most recent 36 months for which data is available. Collision diagrams shall be drawn on standard DEPARTMENT forms contained in the Manual on Uniform Traffic Studies or on other DEPARTMENT approved forms as indicated by the DTOE. A collision analysis shall be performed based on the prepared collision diagram.

Department Responsibility

The CONSULTANT will have access to the DEPARTMENT'S Mainframe Database in order to research crash summary reports. The DEPARTMENT will provide any "hard" copies of crash reports on file. Otherwise, the CONSULTANT shall obtain copies of all crash reports for the most recent 36 months from the local Highway Patrol Station and/or governing police agency.

When the Department does not provide the crash reports Supplemental Work Task 15A, as described in Study Type IV, Composite Studies, will be issued in conjunction with Study Type I to compensate the CONSULTANT for obtaining crash reports.

Task Product: Collision analysis.
Collision diagram.

Task 7: WARRANT ANALYSIS, Conclusions and Recommendations

The CONSULTANT shall analyze the collected data in light of the warranting conditions for all warrants described in the current Manual on Uniform Traffic Control Devices, the DEPARTMENT'S Manual on Uniform Traffic Studies, 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 Signed and Sealed Summary Report. Attached to this report shall be completed Departmental warrant analysis forms, 24 hour counts, delay analysis, the condition diagram, the collision diagram, collision analysis, and the products of any authorized supplemental work tasks.

The intersection studies shall be documented in such a package.

Task Product: Three (3) copies of the warrant analysis report that are signed, sealed and dated by a 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 that can be utilized in preparing plans for the construction of a new or modified intersection. This analysis may include geometric improvements to increase capacity and operational efficiency.

2. Basis of Payment

The basic unit of payment shall be for two types of roadway situations; i.e., an existing intersection or a 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. For diamond interchanges, each ramp terminal shall be considered a separate intersection.

Proposed Intersection: The intersection does not presently exist.

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

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 total period of performance. However, additional work does not forestall the due date for the first intersection. The product of any additional intersections will be due at the rate of one per week after the first month. The DEPARTMENT 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: QUALITATIVE ASSESSMENT

A Professional Engineer shall investigate the intersection during peak and off-peak periods to identify any geometric, traffic operations, and traffic control conditions that may provide input to the determination of optimal intersection operation or signal control. The peak periods shall be determined by the 8, 10, or 12-hour turning movement counts furnished by the DEPARTMENT or provided by the CONSULTANT (supplemental work, Study Type IV - Task 4). The CONSULTANT shall recommend to the DTOE the need for supplemental work tasks.

Color photographs shall be taken of all intersection approaches with emphasis on obtaining visual information which would be of value to the DEPARTMENT during any subsequent project plans preparation activities. For example, utility conflicts, right-of-way constraints, obstructions, unusual geometrics, deficient pavement markings, railroad crossings, etc., should be photographed or detailed. Photos and/or detailed graphics (sketches) shall be included in the conceptual recommendation report to be developed in Task 3.

Task Product: Assessment of intersection operation.
Photographs on CD and sketches.
Recommendations for supplemental work tasks.

Task 2: TRAFFIC VOLUME DATA

Separate work task descriptions exist for this task for an intersection analysis of either an existing or proposed intersection. The 8-hour turning movement data will include pedestrian 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 which 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. Vehicles must be counted by personnel. The CONSULTANT shall use these counts for computerized analysis of the existing intersection using SYNCHRO8.0/SIMTRAFFIC software to determine the existing LOS as a basis for comparison with any proposed improvements. They shall use mechanical/electronic turning movement counter boards and must record separately the number of pedestrians and commercial vehicles.

Task Product: Eight-hour turning movement volumes, all vehicles.
Eight-hour pedestrian volumes.
Eight-hour commercial turning movement volumes.
A CD containing the eight-hour TMC.

Sub-Task 2B: Proposed Intersection

The CONSULTANT shall develop 8 hours of traffic volume data appropriate for computerized analysis of the proposed intersection using SYNCHRO 8.0. To estimate or project the required

turning movement counts, the CONSULTANT shall utilize available network traffic and planning data furnished by the DEPARTMENT and shall apply appropriate factors as dictated by local trends and accepted practice.

Department Responsibility

The DEPARTMENT shall furnish the CONSULTANT with all available traffic data which is relevant to the intersection under study.

Task Product: 8-hour projected turning movement volumes, all vehicles.
8-hour projected pedestrian volumes.

Task 3: IMPROVEMENT RECOMMENDATIONS

From the results of previous tasks and any supplemental work tasks, the CONSULTANT shall prepare a report which presents the conceptual recommendations for optimizing the intersection operation. These recommendations for improvement shall be based on an operational Level-of-Service "C". 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 and explanations of the computerized operation analysis (where applicable) and peak period field investigation. The CONSULTANT shall submit 3 copies of each intersection conceptual report (alternatives) in an 8 1/2" x 11" format.

Task Product: Sketches showing conceptual design alternatives.
Written narrative including recommendations.
Three (3) copies of a completed report, signed and sealed by a Professional Engineer

STUDY TYPE III: ARTERIAL STUDY

1. Purpose

The Arterial Study involves a comprehensive, systematic review of a particular arterial from an operational efficiency and safety perspective. The required product of this study is a report which may be used by the DEPARTMENT as a basis for the development of an arterial improvement program. Elements of the study report are intended to provide input to the plans preparation process for the recommended improvement projects. The study will be limited to urban and suburban arterial sections. Access management shall be part of this study. Refer to Access Management Rules 14.96 & 14.97.

2. Basis of Payment

The basic unit of payment for this study shall be the number of one-way miles comprising the section to be studied (e.g., a 2.3 mile two-way roadway section yields 4.6 one-way miles as a basis for payment). Composite mileage shall be rounded up to the nearest tenth of mile and shall be established by the DEPARTMENT using the Straight Line Diagram (SLD) prior to issuance of the work order. The minimum one-way mileage amount for any study shall be 1.0 mile. The established

unit price for each one-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 DEPARTMENT. 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 an Arterial Study shall be one month for the first 2.0 one-way miles plus two weeks for each additional 2.0 one-way miles or fraction thereof. Signal Operation Studies authorized by the DEPARTMENT 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 DEPARTMENT 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 INVENTORY

The CONSULTANT shall conduct a field inventory of the arterial section(s) under study and shall prepare an inventory of the physical characteristics of the arterial, including, but not limited to, the following:

1. Arterial location, length, speed limits, adjacent land usage, and identification of the major traffic generators.

2. Arterial link data including length, number of through lanes, number of turn and/or drop lanes, length of turn lane storage, location and importance of driveway attachments, bus stops, on-street parking areas, etc.

3. Arterial intersection node data, including control type (stop sign/signalized), lane configuration, pedestrian facilities, and laneage. If the intersection is signalized, data shall include signal phasing and turn restriction information.

Additional roadway features should be included as appropriate.

Task Product: Arterial inventory utilizing Transview aerial imagery.

Task 2: COLLISION ANALYSIS

The CONSULTANT shall provide copies of traffic collision reports to the DEPARTMENT, and shall prepare a collision diagram for the length of the arterial section under study. The diagram(s) shall depict as a minimum the most recent 36 months for which data is available. Collision diagrams shall be drawn on standard Department forms contained in the Manual on Uniform Traffic Studies or

on another Department approved form. They shall be drawn as directed by the Design Project Manager. A collision analysis shall be performed based on the prepared collision diagrams.

Department Responsibility

The CONSULTANT will have access to the DEPARTMENT'S Mainframe Computer in order to research crash summary reports. The DEPARTMENT will provide any "hard" copies of crashes on file. Otherwise, the CONSULTANT will obtain copies of crash reports from the last 36 months from the local Highway Patrol Station and/or local police agency. When the Department does not provide the crash reports Supplemental Work Task 15A, as described in Study Type IV, Composite Studies, will be issued in conjunction with Study Type I to compensate the CONSULTANT for obtaining crash reports.

Task Product: Collision analysis.
Collision diagram.

Task 3: CORRIDOR REVIEW CHECKLIST

The CONSULTANT shall make a thorough review of the arterial corridor to identify factors contributing to inefficient traffic flow. For any operational deficiencies discovered, the CONSULTANT shall prepare a descriptive narrative of the problem and shall develop recommendations for improvement of deficient corridor elements.

Task Product: Corridor review checklist and supporting documentation.
Corridor review and recommendations.

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 Design Project Manager for review and comment, a coordinated sequence of improvements to increase the efficiency of traffic flow along the arterial corridor. Recommended improvements are to be site specific and shall be based upon consideration of all relevant corridor elements. These recommendations shall be directed at improving access, circulation, travel time, delays, stops, safety, and fuel conservation. Emphasis should be given to those projects having low cost and high impact; recommendations for major construction or reconstruction alternatives should be made only when absolutely necessary.

Task Product: Conceptual design recommendations for arterial improvements.

Sub-Task 4A: SYNCHRO 8.0 Analysis

The Consultant shall model the arterial to evaluate the recommended corridor improvements versus the existing arterial operation for the timing pattern period (i.e., AM, PM or Off Peak) as referenced in the work order.

The CONSULTANT shall be responsible for proposing, subject to Department approval, all input values required for the analysis. The CONSULTANT shall use their own computer to run the

programs and shall submit CD(s) of all input/output data files for the existing condition and any recommended corridor improvement runs, along with a hardcopy of any link/node diagrams, to the Department for review and approval **PRIOR** to running the analysis.

Payment shall be based upon the unit price for each arterial system (assuming a minimum of two signalized intersections in the system) plus an additive for each additional signalized intersection within that arterial/network. The established unit price for each system (containing 2 signals) shall be considered full compensation for all work required to perform this study. Note: No compensation will be given to the modeling of full or directional crossovers and/or four-way stop sign intersections. An additional established fee shall be earned for each additive signalized intersection. Roundabouts and/or traffic circles modeled within an arterial shall be compensated for as a signalized intersection.

Task Product: Draft SYNCHRO 8.0 link/node diagram(s)
Draft data file(s) CD(s)
Final SYNCHRO 8.0 output evaluation

Sub-Task 4A.1 - Additive: Each Additional Signalized Intersection

Sub-Task 4A.2 - Additive: Each Additional Timing Plan

Task 5: ACCESS MANAGEMENT REVIEW

This task shall check compliance with Access Management Rules 14.96 & 14.97 as they relate to signal spacing, median spacing, and driveway connection spacing on the State Highway System. Any recommendations, such as adding frontage roads, channelization, etc., should be stated in Task 6 of this Study Type III.

Task Product: A list along with a Transview aerial of all signals, median openings, and driveway connections which are in violation of Rules 14.96 & 14.97. The recommendations regarding these results shall be presented as part of the task product for Task 6 of this Study Type III.

Task 6: PREPARATION AND SUBMISSION OF REPORT

The CONSULTANT shall document the results and recommendations from the Arterial Study in a report on 8 1/2" x 11" paper and submit 3 copies of a Draft Report to the DTOE for review and comment. The Draft Report shall include photos (and/or graphics), summaries of inventory data, travel time and delay studies, results of signal operation studies, arterial coordination analysis, conceptual drawings of recommended improvements with supporting documentation, and a proposed sequential improvement plan. 3 copies of the Final Arterial Study Report, reflecting the Draft Report comments of the DTOE, shall be submitted by the CONSULTANT.

A separate Arterial Study Report shall be prepared and submitted to the DTOE for review and comment for each arterial studied. To the maximum extent possible, each report shall be organized in such a manner so as to facilitate disassembly and piecemeal presentation of conceptual recommendations to design and plans preparation engineers.

Task Product: Three (3) copies of the Draft Arterial Study Report.
Three (3) signed and sealed copies of the Final Arterial Study Report.

STUDY TYPE IV: COMPOSITE STUDY

1. Purpose

The composite study is designed to supplement Study Types I thru III as needed and to enable the DTOE to utilize the services of the CONSULTANT in solving a variety of traffic problems. This study requires the DTOE and CONSULTANT to develop the study design for a particular traffic 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 thru III. 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 Design Project Manager and the CONSULTANT will determine a mutually acceptable performance period and due date.

4. Scope of Work

This section specifies the work tasks which 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.

If a Task is delivered as an independent document, it shall be signed and sealed and shall include a title page, location map, the data presented on standard FDOT forms or as provided by the Design Project Manager, and any narrative necessary for the understanding or interpretation of the data.

Task 1: 8-HOUR TURNING MOVEMENT / PEDESTRIAN COUNT

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 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 which yield 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. Vehicles must be counted by personnel. They shall use electronic turning movement counter boards and must record separately the number of pedestrians and commercial vehicles.

An intersection sketch will be made of sufficient detail to show each approach's lanes, left and right turn lanes (to include the full width lengths), and whether there is a median or other type of separation. If the intersection is signalized the head arrangement shall be shown. The sketch shall show whether the intersection is a "Tee" or a "Plus" type intersection, any offset, and the approximate skew if one exists. In addition, an approximation of the radii on all curb returns shall be shown. To supplement the sketch, colored photos shall be taken of each approach. The photographs shall show the lane configuration along with stop bar detail. Photos should be taken facing the approaching traffic.

Task Product: Eight-hour turning movement volumes.
Eight-hour pedestrian volumes.
Eight-hour commercial turning movement volumes.
Sketch of lane configurations.
Photos of all approaches to intersection.
A CD containing the eight-hour TMC.

Task 1A: Additive: Additional Person
Additional person for conduct of TMC. One or more additional persons may be authorized by the Design Project Manager for the conduct of TMC counts on an as needed basis.

Task 2: 12-Hour Turning Movement / Pedestrian Count

This task will be the same as Task 1 except that the turning movement counts will be conducted over a 12-hour period.

Task Product: Twelve-hour turning movement volumes.
Twelve-hour pedestrian movement volumes.
Twelve-hour commercial turning movement volumes.
Sketch of lane configurations.
Photos of all approaches to intersection.
A CD containing the twelve-hour TMC.

Task 2A: Additive: Additional Person

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

Task 3: 4-HOUR TURNING MOVEMENT / PEDESTRIAN COUNTS (for update)

This task will be the same as Task 1 except that the turning movement counts will be conducted over a 4-hour period.

Task Product: Four-hour turning movement volumes.
Four-hour pedestrian movement counts.
Four-hour commercial vehicle movement counts.

Sketch of lane configurations.
Photos of all approaches to intersection.
A CD containing the four-hour TMC.

Task 3A: Additive: Additional Person

Additional person for conduct of TMC. One or more additional persons may be authorized by the Design Project Manager 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. In conducting the counts, the CONSULTANT shall utilize an automatic traffic counter which will produce a written record of the traffic volumes and the time of day, 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.
Task Product: 24 hour approach volume counts.

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 Design Project Manager 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 utilize an automatic traffic counter which 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 6: 24-HOUR TWO-WAY TRAFFIC COUNT (One Location)

The CONSULTANT shall collect two-way hourly traffic count data at one location for a minimum period of 24 hours. The 24 hour period will be specified by the Design Project Manager. In conducting the counts, the CONSULTANT shall utilize an automatic traffic counter which 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. The count data shall be presented in a tabular form previously approved by the Design Project Manager 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: 7-DAY CONTINUOUS TRAFFIC COUNT (Bidirectional)

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 utilizing a road, the Design Project Manager may authorize the collection of seven-day continuous traffic counts at select stations. In conducting the counts, the

CONSULTANT shall utilize an automatic traffic counter which 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 day period. 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 unless otherwise directed by the Design Project Manager.

Task Product: Seven day graphs and tables.

Task 7A: Additive: Additional Count Stations

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

Task 8: INTERSECTION DELAY ANALYSIS (Side Street Approach and Left Turns Off of the Main)

An intersection delay analysis of the critical side street approach and left turns off the main 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 or as directed by the Design Project Manager. This study shall be performed in accordance with the Manual on Uniform Traffic Studies (MUTS Manual), Chapter XV, Intersection Delay Study provides several parameters including the average stopped delay per approach vehicle, presently existing at an intersection. If the average stopped delay per vehicle on a side street approach (unsignalized intersection) is greater than 40 seconds for any 15 minute period, then an analysis using the procedures in the MUTS Chapter I, Traffic Signal Warrant Study, should be conducted. This must be recommended to the DTOE and approved as an additional task. If the intersection is signalized, a Signal Optimization Study should be recommended to the Design Project Manager and approved (see Task 25, Traffic Signal Optimization).

Task Product: Intersection delay analysis for one side street approach and left turns off the main.

TASK 9: INTERSECTION DELAY ANALYSIS (One Approach)

A delay analysis of any one specified approach shall be made for a two-hour period as specified by the DTOE. This study shall be performed in accordance with the Manual on Uniform Traffic Studies (MUTS Manual), Chapter XV, Intersection Delay Study.

Task Product: Delay analysis for any one designated approach.

Task 10: PEDESTRIAN VOLUME COUNT

A pedestrian volume count 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 and treated as one location. An intersection will be counted and treated as one location.

Task Product: Eight-hour pedestrian volume count.

Task 11: PEDESTRIAN GROUP SIZE STUDY

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 12: VEHICLE GAP SIZE STUDY

A vehicle gap size shall be made for a total of eight hours encompassing the morning and evening peak traffic periods. A mid-block study will be counted as one location. An intersection will be counted and treated as one location. If there is a median of sufficient width to store a vehicle the gap size should be determined for both directions.
Task Product: Eight-hour vehicle gap size study.

Task 13: 8-HOUR BICYCLE COUNT

Bicycle volumes shall be collected for a total of 8 hours which includes the morning, noon day and evening peak bicycle periods or during time periods specified by the Design Project Manager. The CONSULTANT will present this data on an approved form or format.

Task Product: Eight-hour bicycle volumes.

Task 14: FIELD INTERSECTION INVENTORY (Condition Diagram)

The CONSULTANT shall conduct a field inventory of each intersection under study and prepare a condition diagram on standard Department forms contained in the Manual on Uniform Traffic Control Studies or in another format approved by the DEPARTMENT.

Condition diagrams shall include intersection geometry, all traffic control devices, posted speed limits on each intersection approach, 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, fixed objects, buildings, utility and signal poles, lighting, trees and shrubbery (if they affect visibility) and etc.

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 Design Project Manager should be aware.

Task Product: Condition diagram.
Colored photographs.

Task 15: COLLISION ANALYSIS (per intersection)

The CONSULTANT shall provide copies of collision records to the DEPARTMENT and shall prepare a collision diagram for the intersection under study. The diagram shall depict the most recent 36 months for which data is available. Collision diagrams shall be drawn on standard Department forms contained in the Manual of Uniform Traffic Studies or on another Department approved form such as computer generated forms and drawings. A collision analysis shall be performed based on the prepared collision diagram.

Task Product: Collision diagram and summary report.
Analysis of collision data.

Department Responsibility

The CONSULTANT will have access to the DEPARTMENT'S mainframe computer in order to research crash summary reports. The DEPARTMENT will provide "hard" copies of any crash reports on file. Otherwise, the CONSULTANT shall obtain crash reports for the last 36 months from the local Highway Patrol Station and/or local police agency. When the Department does not provide the crash reports Supplemental Work Task 15A, as described in Study Type IV, Composite Studies, will be issued in conjunction with Study Type I to compensate the CONSULTANT for obtaining crash reports.

Task 15A: Researching Crash Report Forms (per intersection)

The CONSULTANT shall obtain copies of all crash reports for the most recent 36 months from the local Highway Patrol Station and/or governing police agency.

Task Product: Crash reports from the last 36 months.

Task 16: TRAVEL TIME AND DELAY STUDY (One Arterial)

The CONSULTANT shall perform standard travel time and delay studies along the arterial. In the interest of efficiency, the CONSULTANT shall employ only DEPARTMENT approved, automated electronic distance and time measuring devices and data analysis software - Traffic Analyzer (TA-88) and Moving Vehicle Run Analysis Package (MVRAP). Other techniques considered for use must receive prior approval by the Design Project Manager. This study shall be performed in accordance with the Manual on Uniform Traffic Studies (MUTS Manual).

Travel time and delay studies shall be conducted in each direction of travel during the morning and afternoon peak traffic periods as determined from 24 hour traffic counts, and also during a daytime off-peak period. Six runs shall be done in each direction of travel for each of the three sample time periods.

From the travel time and delay data, a Traffic System Performance Evaluation, Link Performance Profile, and a Speed Profile, shall be generated by computer for each period and direction. These printouts shall be supplemented with a written analysis of the route location giving possible causes of the measured stops, delays and contained travel speeds.

Payments shall be based on:

1. A "Basic" study that consists of Three (3) 2-Hour study periods; AM Peak; Off Peak and PM Peak. A total of six runs shall be completed in each direction during each of the three periods. This will include 6 signalized intersections with additional compensation at the rate of 10% of the basic rate for each two additional signalized intersections.

2. If the statistical sample requires more runs than can be accomplished during the Basic study one (1) or more additive Study Periods will be authorized by the Design Project Manager to permit accomplishing the required study effort.

3. An Arterial Travel Time and Delay Report (Arterial Report) will include a separate discussion of each combination of direction of travel and time period (six). The Arterial Travel Time and Delay Report shall also include an overall summary which consolidates the findings of each of the separate discussions.

Task Product: Traffic system performance evaluation.
Link performance profile.
Speed profile.
Travel time and delay analysis.
Arterial travel time and delay report.

Task 16A - Additive: Additional 2-Hour Study Period

Additional 2-Hour study period to supplement the "Basic" study.

Task 17: 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, delays, conflicts or any operational characteristics that should be considered in evaluating the need for a traffic signal and/or roadway 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, or traffic control aspects about which the Design Project Manager should be aware. The CONSULTANT shall recommend to the Design Project Manager the need for appropriate supplemental work tasks.

Task Product: Assessment of intersection operation.
Recommendation for supplemental work tasks.
Photographs of intersections.

Task 18: TRAFFIC CONFLICTS STUDY

The CONSULTANT shall conduct a Traffic Conflicts Study as defined in the DEPARTMENT'S MUTS Manual. Four (4) hours of data shall be collected for each approach. This should include at least one hour during morning peak and afternoon peak periods. The CONSULTANT will then analyze the data for statistical significance as outlined in Chapter X of the MUTS Manual.

Task Product: Assessment of intersection operation.
Recommendation for supplemental work tasks.
Photographs of intersection.

Task 19: DEVELOPMENT OF ALTERNATIVES AND RECOMMENDATIONS

Utilizing 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 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 utilizing a minimum of three other tasks, one of which shall be Task 20, Preparation of Reports.

Task Product: Development of alternatives.
Analysis of alternatives.
Recommended alternative (sketch if appropriate).

Task 20: PREPARATION AND SUBMISSION OF PROJECT DESIGN CONCEPT

General

For this task, specific scope requirements and compensation terms shall be negotiated on a "Per Work Order" basis.

The CONSULTANT shall document the results and recommendations obtained from all tasks in a Composite Study as a result of Task 19 or the recommended improvements from another study type in a Project Design Concept. The FDOT Design department uses this document to develop the Design Scope of Services that is the basis for the Final Design development. The CONSULTANT shall include in the Project Design Concept proposed language to be included in the Design Scope of Services. All topographic information obtained from the condition diagram of a previous task shall be used in the preparation of the Project Design Concept.

Task Product: Three (3) copies of a Project Design Concept that are signed, sealed, dated, on 8 1/2" x 11" paper and in a folder.
One (1) looseleaf, unbound, reproducible copy of the Project Design Concept.

Task 21: FIELD SURVEY FOR A SIGNAL DESIGN

General

For this task, specific scope requirements and compensation terms shall be negotiated on a " per Work Order" basis.

The survey is to include the necessary alignment and topographic information for a base drawing for a signal design. The survey is to be submitted as a Microstation file with the aboveground utilities and the utilities' vertical heights on a separate Microstation Level from the rest of the survey.

Task Product

< Intersection Survey - 500' entering direction (main street)
150' exiting direction (main street)

100' either direction (side street)

< Roadway Plan Sheet (11" x 17").*
< A formatted CD with Microstation File.*

* Only necessary if the CONSULTANT does not use the survey for a design or if the Department's Design Project Manager requests the survey.

Task 21A: FIELD SURVEY FOR A ROADWAY DESIGN

General

For this task, specific scope requirements and compensation terms shall be negotiated on a "per Work Order" basis.

The survey is to include the necessary alignment and topographic information for a base drawing for turn lanes. Cross sections may be needed at critical areas. The length of the survey will be determined by the length of the turn lane that is to be constructed. In addition, should a signal survey be requested with a roadway survey, the cost of the roadway survey will include the cost of the signal survey at no additional cost to the DEPARTMENT. The survey is to be submitted as a Microstation file with the aboveground utilities and the utilities' vertical heights on a separate Microstation Level from the rest of the survey.

Task Product

< Roadway survey for turn lanes with cross sections at critical areas.
< Roadway Plan Sheet (11" x 17").*
< A formatted CD with Microstation File.*

* Only necessary if the CONSULTANT does not use the survey for a design or if the Department's Design Project Manager requests the survey.

Task 22: TRAFFIC SIGNAL OPTIMIZATION (per Intersection)

Analyze various signal control alternatives - controller type, phasing, cycle length, and splits - using approved traffic signal optimization software (i.e., SYNCHRO 8.0, or approved alternate) for all hours of the day. Determine the optimal strategy at a signalized intersection/ corridor as expressed by the measures of effectiveness produced by the program; these will include as a minimum delay, stops and fuel consumption of the existing vs. proposed improvements. For example, the analysis may compare average stopped delay per stopped vehicle existing at an intersection, to the average stopped delay per stopped vehicle if a traffic signal were optimized. Optimization of the signal operation shall be evaluated for each practical geometric configuration, including the existing one. Take into consideration the nature, proximity and influence of any adjacent signalized intersections when developing the optimal control parameters. Also, analyze the potential for nighttime flashing of the traffic signal. The CONSULTANT shall obtain from the Maintaining Agency existing controller/system timings for any before evaluations, where applicable.

The CONSULTANT must use their own computer for analysis (the software used must be approved by the DTOE). The format of the timing charts must be approved by the DEPARTMENT prior to use.

All traffic count data required for the purpose of this study will either be provided by the DEPARTMENT or will be provided by the CONSULTANT under Study Type IV.

Task Product:

Optimal signal control strategy for each geometric configuration.
Practical geometric configuration including the existing one.
Level of Service of the intersection(s) before and after the optimization of the traffic signal(s).
Analysis of potential for nighttime flashing.
Final report that is signed, sealed and dated which includes the computer model and output used in the report.

Sub-Task 22A: Intersection Timing Plan

The necessary settings to be developed for this task will include, but not limited to, the following:

* Minimum Green
* Extension
* Max I/II
* Yellow Clearance
* Red Clearance
* Ped Walk (if applicable)
* Ped Clearance (if applicable)
* Detector Memory (on/off)
* Min Recall (on/off)
* Preemption timing plan when applicable

The CONSULTANT shall be responsible for proposing, subject to Department approval, all input values required for the analysis. The CONSULTANT shall use their own computer to run the programs and shall submit CD(s) of all input/output data files for the existing condition and any recommended corridor improvement runs, along with a hardcopy of any link/node diagrams, to the Department for review and approval **PRIOR** to running the analysis.

Task Product:

Intersection Controller Timing Chart
Data file(s) on CD(s).

Sub-Task 22A.1: Additive: Additional Intersection

Additional Intersection Timing Plan

Sub-Task 22B: System Timing Plan

The CONSULTANT shall determine the optimum system timing pattern(s) and the optimum cycle length during different times of the day/week. When a system analysis is performed, the necessary settings to be developed will include but not limited to the following:

* Cycle Length
* Splits
* Offsets
* Flashing Periods

* Force-offs * Permissive * TOD Plan * Free Periods
* Day-of-Week Plan Periods

These parameters will be developed for the following periods:

- Weekday: AM, Midday, PM, Off Peak and Night patterns
- Weekend: Sat and Sun patterns

The CONSULTANT shall submit to the Department a Time-Space Diagram with the efficiency and attainability of the coordinated signalized intersections before and after the optimization of the traffic signals. The CONSULTANT will compare the stop, delay and bandwidth before and after the optimization of the traffic signals. The CONSULTANT will also submit bandwidth runs using TSDWIN software for each timing pattern.

For the purpose of this task, the following definitions apply:

A traffic control timing pattern is a set of cycle length(s), splits and offsets for a section.

A section is a portion of a traffic control system which can be controlled by a single set of timing parameters.

An analysis shall consist of at least the following steps:

1. Initial evaluation of existing system and/or isolated timings. This step will provide a basis for the evaluation of the benefits of improving design and operations and to ensure that system operation is being modeled correctly.

2. Run intersection program (i.e., SYNCHRO 8.0, or approved alternate) on selected critical intersections.

3. SYNCHRO 8.0, or approved alternate with Existing Phasing (if applicable): To produce the best design with existing phasing.

4. SYNCHRO 8.0, or approved alternate with Optimal Phasing: This step shall be performed to provide the DEPARTMENT with a tool to establish priorities for future improvement projects.

5. Final Bandwidth Design.

6. Disutility Design and Evaluation with TRANSYT-7F.

The CONSULTANT shall be responsible for proposing, subject to Department approval, all input values required for the analysis. The CONSULTANT shall use their own computer to run the programs and shall submit CD(s) of all input/output data files for the existing condition and any recommended corridor improvement runs, along with a hardcopy of any link/node diagrams, to the Department for review and approval **PRIOR** to running the analysis.

The implementation and fine tuning of the system timings shall not be included in the price of this

task, but paid under the separate tasks 22D and 22D.1.

Payment shall be based upon the unit price for each arterial system (assuming a minimum of two intersections in the system) plus an additive for each additional intersection within that arterial/network. The established unit price for each system containing 2 signals shall be considered full compensation for all work required to perform this study. An additional established fee shall be earned for each additive or supplemental work task when authorized by the Design Project Manager.

Task Product: Master Clock Chart (Hardwire, TBC, UTCS, CLS)
Platoon-Progression, link/node diagrams
Data files on CD(s)

Sub-Task 22B.1: Additive: Additional Intersection

Additional intersection for System Timing Plan for same route and/or study.

Sub-Task 22C: Traffic Responsive Settings

General

For this subtask, specific scope requirements and compensation terms shall be negotiated on a "per Work Order" basis.

The CONSULTANT shall be responsible for the development of settings for the On-Street Master and Local Supervisors which will enable the Subsystem to operate in a Traffic Responsive mode. Likewise, development of associated settings that may be required for operation at the Central Office Computer shall be included in this task. Examples of settings to be developed for this task will include, but not be limited to the following:

* Sensor Assignments.
* Assignment of Sensor to Computational Channels.
* Traffic Pattern Transfer Thresholds.
* Valid Pattern Designation.

The Traffic Responsive settings shall be developed in consideration of the following:

* Weekday: AM, Midday, PM, off-peak and Late Night periods.
* Weekend and Holiday patterns.
* Seasonal Variance in traffic conditions.
* Special Events: Civic or Sporting events.

Special operating mode capabilities of the System shall be considered for use by the CONSULTANT. These settings may include but not be limited the following:

* Time of Day override of the Traffic Responsive mode.
* Occupancy override pattern selection.
* Queue override pattern selection.

Preliminary settings shall be implemented into the field equipment and then fine-tuned for optimum operation. These preliminary settings shall be subject to review prior to implementation. During this period, local supervisors shall be overridden to back-up Time-of-Day operation in order to minimize impact on traffic. During this fine tuning process, the CONSULTANT shall submit copies of the pattern change log for the system to the DEPARTMENT for analysis.

Task Product: A workable set of Traffic Responsive settings. The implementation and fine tuning of the system timings shall not be included in the price of this task, but paid under the separate tasks 22D and 22D.1.

Sub-Task 22C.1: Additive: Additional Subsystem

General

For this subtask, specific scope requirements and compensation terms shall be negotiated on a "per Work Order" basis.

Traffic Responsive settings for an additional subsystem.

Sub-Task 22D - Timing Implementation

A workable set of fine-tuned settings resident in a local controller.

Sub-Task 22D.1 - Additive (Additional Intersection)

A workable set of fine-tuned settings resident in an additional local controller.

Task 23: SPOT SPEED STUDY

The CONSULTANT shall conduct a Spot Speed Study as set forth in the Manual on Uniform Traffic Studies (Chapter XII of the 2000 MUTS Manual). The Study shall include a minimum sample of 100 vehicles for each direction of travel. The Consultant will present this data on an approved form and in an approved format.

Task Product: Spot speed data for one site.

Task 23A: Additive: Additional Location

Additional Spot Speeds requested for same route and/or study.

Task 23B: Additive: Speed Zone Study Report

Under this supplemental task the CONSULTANT shall prepare a Speed Zone Study report based on the spot speed study data and the FDOT manual, SPEED ZONING FOR HIGHWAYS, ROADS AND STREETS IN FLORIDA, latest edition. Using these guidelines, the CONSULTANT shall prepare a report and recommendations on changes to existing speed zones. Existing speed zone data in the form of Straight Line Diagrams (SLDs) will be furnished by the DTOE. The inventory of

existing speed limit signs indexed by milepost will be the responsibility of the CONSULTANT. Discrepancies between the SLD data and field conditions shall be highlighted in the report.

Task Product: Speed zone study report.

Task 24: LEFT TURNS BY CYCLE

The CONSULTANT shall conduct a study of left turn movements by cycle for a specified approach. This data will be presented on a form furnished by the Design Project Manager. This will be performed during a specified 2-hour period.

Task Product: Left turn movements by cycle.

Task 25: NO-PASSING ZONE STUDY

This type of study will be performed to determine what type of pavement markings should be used in the center line of a roadway, i.e., broken yellow line or solid yellow line, so that motorists have an indication of where it is safe to pass another vehicle. This study shall be based on section 3B-5 of the MUTCD entitled "Warrants for No-Passing Zones at Curves."

Task Product: The limits of the no-passing zone for the given roadway segment.

Task 26: ROADWAY SIGNING INVENTORY

The CONSULTANT shall conduct a field inventory of each roadway listing all existing signs and locations for all of District 3, by County and/or State Route number. Roadways are for both "Limited and Non-Limited Access Facilities." Inventory shall include, but not be limited to, the following information:

1. Type of sign (R-1, W-11, etc.)
2. Size of sign Panel
3. Size of Letters
4. Distance to nearest intersection or exit (in the case of Interstate).
5. Color of sign background and color of letters.
6. Horizontal clearance from the edge of the nearest travel lane to the nearest support.
7. Vertical clearance from bottom of the sign panel to the ground at its closest point.
8. Milepost where sign is located.

Task Product: Inventory of all roadway signs for a County or State Route number which includes, as a minimum, all of the information listed above. These results shall be submitted in Microsoft Word or the latest version of Microstation.

Task 27: SCHOOL ZONE INVENTORY

The CONSULTANT shall complete an on-site review of a designated school zone by location. Note all inventory changes on the existing zones along with the date reviewed. Fill out complete inventory for any new school zones. School zones are type 1-11 as shown in ROADWAY AND

TRAFFIC DESIGN STANDARDS (includes school bus stop ahead signs, etc.). The DEPARTMENT will provide inventory forms.

Any drawings shall be submitted in Microsoft Word or the latest version of Microstation.

Task Product: A completely revised inventory of all school zones.

Task 28: WARRANT ANALYSIS, CONCLUSIONS, AND RECOMMENDATIONS

The CONSULTANT shall analyze the provided data in light of the warranting conditions for all warrants described in the current Manual on Uniform Traffic Control Devices, the DEPARTMENT'S Manual on Uniform Traffic Studies, 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, 8, 10, or 12 hour turning movement counts, delay analysis, the collision diagram, collision analysis, and the products of any authorized supplemental work tasks. The intersection studies shall be documented in such a package.

Task Product: Two (2) copies of warrant analysis report that is signed, sealed and dated by a registered professional engineer.

Task 29: MEETING/PRESENTATION

General

For this task, specific scope requirements and compensation terms shall be negotiated on a “per Work Order” basis.

The CONSULTANT shall attend a meeting such as a Preconstuction, Utility, Community Awareness Plan (CAP), Public Information, MPO, TCC, or CAC and present the findings and recommendations resulting from a specified work order/study location or roadway segment at the discretion of the DTOE. This meeting shall cover all the recommendations for improvement, such as the addition of lanes, signal timing/phasing changes, speed limit changes, signing and marking changes, and access management review results, i.e., closing medians or driveways. This may also include a graphics presentation such as a SYNCHRO8.0/SIMTRAFFIC demonstration or PowerPoint presentation showing existing conditions, recommended improvements, etc. As part of this process, the Consultant shall contact all municipalities and other interested parties affected by the issues to inform them of the time and location of the public information session.

Task Product: Presentation and meeting participation.

TASK 30: CONSTRUCTION PLANS - GENERAL

General

For Task 30 series tasks and subtasks, specific scope requirements and compensation terms shall be

negotiated on a “per Work Order” basis.

This scope of work contains design tasks for which the CONSULTANT will be issued work orders. The design tasks associated are as follows:

Design Task 30A Signalization Design
- Sub Task 30A.1 - Box Overhead Design
- Sub Task 30A.2 - Mast Arm Design
- Sub Task 30A.3 - Pedestrian Features

Design Task 30B Roadway Design (single turn lane, typ.)
- Sub Task 30B.1 - Additional Turn Lane
- Sub Task 30B.2 - Median Modification
- Sub Task 30B.3 - Loops and Loop Lead-ins
- Sub Task 30B.4 - Minor Drainage Design

PROJECT REQUIREMENTS AND PROVISIONS FOR WORK

Governing Regulations

The services performed by the CONSULTANT shall be in compliance with all applicable DEPARTMENT Manuals and Guidelines. The DEPARTMENT'S Manuals and Guidelines incorporate by requirement or reference all applicable State and Federal regulations. The current edition, including updates, of the following DEPARTMENT Manuals and Guidelines shall be used in the performance of this work. It shall be the CONSULTANT'S responsibility to acquire and utilize the necessary DEPARTMENT manuals that apply to the design work required to complete this project.

1. Plans Preparation Manual
2. Florida Department of Transportation Design Standards
3. Florida Department of Transportation Bicycle Facilities Planning and Design Manual,
4. Florida Department of Transportation Right-of-Way Mapping Handbook
5. Florida Department of Transportation Right-of-Way Mapping CADD Handbook
6. Florida Department of Transportation Location Survey Manual
7. Florida Department of Transportation EFB User Guide (Electronic Field Book)
8. Florida Department of Transportation Drainage Manual
9. Florida Department of Transportation Soils and Foundations Manual
10. Florida Department of Transportation Structures Design Guidelines
11. Florida Department of Transportation Computer Aided Design and Drafting

(CADD) Roadway Standards Manual

12. Florida Department of Transportation Roadway CADD Handbook

13. AASHTO

14. MUTCD

15. American Disabilities Act

16. Elder Road User Act

17. MUTS Manual

18. Basis of Estimate Manual

19. Florida Department of Transportation Standard Drawings for Structures Topic Number 625-020-300-D

20. Erosion and Sediment Control Handbook

21. Stormwater Management Manual

22. FHWA Best Management Practices for Erosion and Sediment Control

23. Utility Accommodation Guide

24. Flexible Pavement Design Manual

25. State Highway System Access Management Classification System and Standards Chapter 14-96 and 14-97

26. Florida Department of Transportation Traffic Engineering Manual

The following provisions shall apply:

1. Roadway Improvements

   All plans and design are to be prepared in accordance with the latest standards adopted by AASHTO, DEPARTMENT Standard Specifications, DEPARTMENT current memorandums, and the current editions of the DEPARTMENT Roadway Plans Preparation Manual, DEPARTMENT Flexible Pavement Design Manual, DEPARTMENT Drainage Manual and shall be accurate, legible, complete in design, and drawn to the appropriate scale, furnished in reproducible form on material acceptable to the DEPARTMENT.

2. Drainage Services

   All drainage plans and designs are to be prepared in accordance with current DEPARTMENT memorandums, DEPARTMENT Drainage Manual, 23 CFR 650, and CONSULTANT Plans Submittal Requirements.

3. Geotechnical Services

   Work shall be performed in accordance with the DEPARTMENT'S special instructions and Soils and Foundations Procedure Manual # 675-020-012-c with all tests performed as specified in the manual using the appropriate FM, AASHTO and ASTM standard testing methods.

5. Signing and Marking Plans

   All plans are to be prepared in accordance with the latest design standards and practices (Manual on Uniform Traffic Control Devices), DEPARTMENT Standard Specifications, Indexes, DEPARTMENT Plans Preparation Manual, and instructions issued by the DEPARTMENT to the CONSULTANT, and shall be accurate, legible, complete in design and drawn to the scale as directed by the DEPARTMENT and furnished in reproducible form.

6. Utilities

   All work shall be in accordance with the DEPARTMENT'S Utility Manual, Standard Specifications, current memorandums, Plans Preparation Manual, and instructions as issued by the DEPARTMENT to the CONSULTANT, and shall be accurate, legible, complete in design, drawn to the appropriate scale and furnished in reproducible form on material acceptable to the DEPARTMENT. Utility relocation plans shall reflect future construction.

   The CONSULTANT will prepare and submit packages for each phase submittal as outlined below or electronically by email to include the elements listed below with a quantity of one as determined by the Department's Design Project Manager.

60% Phase

20 sets of roadway plans
2 sets of design documentation books
2 sets of roadway computation books
2 sets of structures calculations books
1 cost estimate spreadsheet
1 electronic cost estimate spreadsheet

100% Phase

20 sets of roadway plans
2 sets of design documentation books
2 sets of roadway computation books
2 sets of structures calculations books
2 Final Geotechnical Reports
1 cost estimate spreadsheet
1 electronic cost estimate spreadsheet
20 copies of 60% Phase comments

Final Phase

2 signed and sealed plan sets
4 copies of signed and sealed plans
2 original computation books (roadway) (signature required on each sheet by Engineer responsible for calculations
1 set of final design documentation
1 copy CADD files on disc with necessary documentation
1 copy of 100% comments
1 cost estimate spreadsheet
1 electronic cost estimate spreadsheet

The CONSULTANT'S schedule should allow for a two (2) week review time by the DEPARTMENT for the 60% AND 100% reviews.

DESCRIPTION OF DESIGN TASKS

This section describes each design task included in this scope and 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 designed by the CONSULTANT.

The CONSULTANT shall produce Pushbutton Contract Plans which illustrate recommended improvements approved by the Design Project Manager. The plans shall be of sufficient detail to allow the DEPARTMENT to use the plans to implement and construct the recommended improvements. The plans shall indicate proposed improvements, quantities in tabular form, dimensions, and other necessary information for the improvements relative to the existing conditions. Pay items and quantities shall be included. The plans shall be ready to let to contract and shall be signed, dated and sealed. The DEPARTMENT will provide a base drawing of existing conditions, copies of plans made from microfilm, the field survey to produce same or request the CONSULTANT to perform the Task for the Field Survey.

The CONSULTANT shall conduct a field inventory of the intersection under design for the existing conditions. The CONSULTANT will also verify that the proposed improvement will not conflict with the existing conditions. Prior to beginning the design, the CONSULTANT will meet with a DEPARTMENT representative on-site to determine the best approach for the design.

The consultant shall arrange and conduct an on-site utility meeting and perform all necessary utility coordination.

Pushbutton Contract Plans for improvements at an intersection shall be English and be prepared on a standard size reproducible plan sheet (11" x 17") drawn to the appropriate scale. Plan files are to be delivered to the DEPARTMENT on a formatted CD in a Microstation CADD format. Typical plan detail to be shown shall include, but not be limited to the following: existing and proposed roadway, typical section, traffic signal poles, displays, controller cabinets, loops, loop lead-ins, pull boxes, conduit, signing, pavement markings, turn lanes and sidewalks.

All plans are subject to a field review prior to acceptance of the design. This field review is to be attended by the CONSULTANT and a DEPARTMENT representative.

Task Product

< Reproducible pushbutton contract plan.
< Three copies of the pushbutton contract plans (S/S & dated).
< A formatted CD with Microstation File.
< Tabulation of quantities.

PERIOD OF DESIGN TASK PERFORMANCE

The normal period of performance allowed for completion of a Pushbutton Plan is 4 months, including time required by the DEPARTMENT for review purposes, with a maximum of 6 months allowed based upon approval by the Design Project Manager.

SCOPE OF WORK

This section specifies the work tasks to be performed by the CONSULTANT, the responsibilities of the CONSULTANT and the DEPARTMENT, the products to be developed by the CONSULTANT and delivered to the DEPARTMENT at the completion of the Pushbutton Construction Plan.

Task 30A: SIGNALIZATION PLANS, SIGNING AND PAVEMENT MARKINGS

A Professional Engineer of the firm shall be in responsible charge for the design of a traffic signal at the intersection. The signal plan sheet is to include but not limited to signal operating plan, controller assembly, controller timings, loops, loop lead-ins, conduit, pole schedule, signal head details, signing and pavement marking, pole location rod readings, a rod reading for the high point of the road and a summary of pay items.

Traffic Signal Plans

The CONSULTANT shall be responsible for the design and preparation of a complete set of traffic signal plans for all traffic signal work on the project. The signal poles will require a strain pole analysis with any changes that are made along the span wires. All traffic signal plans will be designed in accordance with the Department's Traffic Signal Standard Specifications, the Standard Guidelines for Traffic Signal Design and Installation, current Department standards, policies, procedures and desires as made known to the CONSULTANT. Attention is directed to the need for close coordination of signal pole locations, utility locations and right of way requirements for signal devices at all signalized intersections.

Signing and Pavement Markings

The CONSULTANT shall prepare plan sheets, notes, and details to include the following: Key Sheet, Tabulation of Quantities sheet(s), General Note sheet(s), Plan Sheet(s) only as necessary, Guide Sign Detail sheet(s), Metal/Concrete Pole detail(s) as applicable, and Service Point detail(s). Signs and pavement markings shall be designed in accordance with the Elder Road User policy.

Pavement markings for the project will be detailed through the use of notes and tabulation if the project is consistent of a typical pavement marking. In the event pavement markings are particular to an intersection or urban setting then the consultant shall detail the markings for that area in a clear manner for construction.

Task Product

< Signal Plan Sheets.
< A formatted CD with Microstation File.
< Summary of Pay Items.
< Computation Booklet
< A list of all utilities and the phone numbers of all utility contacts present at the intersection.

Sub-Task 30A.1: Box Overhead Design

The signal design is to be a four pole system with a span assembly over each approach.

Sub-Task 30A.2: Mast Arm Design

The signal design is to be a Mast Arm System.

Sub-Task 30A.3: Pedestrian Features

The traffic signal design is to include pedestrian features.

Task 30B: ROADWAY DESIGN

A Professional Engineer of the firm shall be in responsible charge for the design of a turn lane at the intersection. The plan sheet is to include but not limited to typical section, plan view, curb details, signing and pavement marking, and a summary of pay items. The existing and proposed cross sections are to be considered in the design. Turn lanes are to be designed using Standard Index 301 and 526.

General

The Roadway Plans Package shall be prepared by the CONSULTANT. This work effort includes the roadway design and drainage analysis needed to prepare a complete set of Roadway Plans, Drainage Plans (where applicable), Traffic Control Plans and other necessary documents.

Design Analysis

1. Typical Section Package - The CONSULTANT shall prepare a Typical Section Design Package to be submitted to the DEPARTMENT for review and approval. This package shall include the following:
   Transmittal letter
   Location Map(s)
   Typical Section(s) (including bridge sections)
   Data Sheet(s)

   The signed and sealed typical section design package shall be submitted to the DEPARTMENT for approval at the earliest possible date and prior to the Phase I roadway plan submittal stage.

2. 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 consistency and driver expectancy, aesthetics, pedestrian and bicycle concerns,

ADA requirements, elder road user policy, access management, 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, and 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 DEPARTMENT standards.

3. Pavement Design Package - The DEPARTMENT will be responsible for pavement design and any recommendations regarding milling and recycling. It is important to note that existing paved turnouts, tapers and auxiliary lanes have various pavement thicknesses and creative use of these areas may generate several pavement thickness designs; Therefore, several areas may be treated separately for overlay or milling operations. The consultant shall incorporate these recommendations into construction plans.

4. Design Documentation, Computation Book and Quantities - The CONSULTANT shall submit to the DEPARTMENT design notes and computations to document the design conclusions reached during the development of the construction plans.

   The design notes and computations shall be recorded on standard size computation sheets, fully titled, numbered, dated, indexed and signed by the designer and the checker. Computer output forms and other oversized sheets shall be folded to the standard size. The data shall be in a hard back folder for submittal to the DEPARTMENT.

   One copy of the design notes and computations shall be submitted to the DEPARTMENT with each phase submittal. When the plans are submitted for final review, the design notes and computations corrected according to DEPARTMENT comments shall be resubmitted. At the project completion, a final set of design notes and computations, signed by the CONSULTANT, shall be submitted with the record set of plans and tracings.

The design notes and calculations shall include, but not be limited to the following data:

a. Design standards used for the project.

b. Geometric design calculations for horizontal alignment that is not included in the quantity computation booklet.
c. Vertical geometry calculations.

d. Capacity analysis and intersection operational analysis.

e. Drainage computations.

f. Earthwork calculations not included in the quantity computation booklet.

g. Calculations showing cost comparisons of various alternatives considered.

h. Documentation of decisions reached resulting from meetings, telephone conversations or site visits.

i. Calculations of quantities.

j. Justification for any variation from standards.

k. Pavement design calculations.

Roadway Plans

The CONSULTANT shall prepare the roadway plans in a "streamlined" format with primarily typical sections, tabulations and notes. The following will be included as appropriate: Key Map, Typical Section sheet(s) with notes, Cross Section sheet(s) only where needed, Summary of Quantities sheet(s), Drainage Structure Sheet(s), Plan/Profile Sheet(s) only for special detail areas, Intersection Detail sheet(s), Summary of Pay Items, miscellaneous construction details, and any other detail sheets necessary to convey the intent and scope of the project for the purposes of construction.

Drainage Plans

The CONSULTANT shall prepare plan sheets, notes, and details to include the following: Drainage Map sheet(s), Drainage Structure sheet(s), Summary of Drainage Structure sheet(s), Lateral Ditch and Outfall Plan sheet(s), Lateral Ditch and Outfall Cross Section sheet(s) if needed, Bridge Hydraulics Recommendation sheet(s), Retention/Detention Plan sheet(s) if needed, Special Drainage Detail sheet(s), and Erosion Control Details.

Traffic Control Plan

1. Traffic Control Analysis - The CONSULTANT shall design a safe and effective Traffic Control Plan to move vehicular and pedestrian traffic during all phases of construction. The areas shall include, but are not limited to, construction phasing of roadway base and asphalt, bridge construction, utility relocation, drainage structures, ditches, front slopes, back slopes, drop offs within clear zone, traffic monitoring sites, ingress and egress to existing property owners and businesses, signing and pavement markings, signal and detour quantity tabulations. Special consideration shall be given to the construction of the drainage system when developing the construction phases. Positive drainage must be maintained at all times.

   The CONSULTANT shall investigate the need for peak hour constraints when excessive traffic may require the ceasing of construction and/or all lanes remaining open during certain hours of the day, possibility of night work, temporary traffic signals, alternate detour roads, and the use of materials such as sheet piling in the analysis. The Traffic Control Plan shall be prepared by a certified designer who has completed the Department's training course, and in accordance with the Department's Roadway and Traffic Design Standards and the Roadway Plans Preparation Manual.

   The CONSULTANT shall consider the local impact of any lane closures or alternate routes. Diligence shall be used to minimize negative impacts by appropriate specifications, recommendations or plans development. Local impacts to consider will be local events, holidays, peak seasons, detour route deterioration and other eventualities. The CONSULTANT shall be responsible to obtain local authorities' permission for use of detour routes not on state highways.

2. Traffic Control Plans - The CONSULTANT shall prepare plan sheets, notes, and details to include the following: Typical Section sheet(s), General Notes and Construction Sequence sheet(s), Typical Detail sheet(s), Tabulation of Quantities sheet(s), Traffic Control Plan

sheet(s), Signing and Pavement Marking sheet(s), Temporary Signalization sheet(s). The CONSULTANT shall prepare additional plan sheets such as cross sections, profiles, drainage structures, retaining wall details and sheet piling as necessary for proper construction and implementation of the traffic control plan.

Utility Coordination

a. The 60% plans shall depict all known existing utilities for the initial contact and verification by each Utility Company in accordance with the DEPARTMENT'S manuals, design memorandums and guidelines.

b. Coordination with Utility Companies - After the DEPARTMENT has received the CONSULTANT'S 60% plans submittal, the DEPARTMENT will then schedule an on-site Utility Meeting which the CONSULTANT shall attend and will be responsible for providing technical data. The purpose will be to determine the effects the project has on existing and proposed facilities. This allows the utility representatives to provide input into the development of the roadway plans. The CONSULTANT in coordination with the area Utility Coordinator shall have the minutes of each utility meeting recorded for written submission to the DEPARTMENT.

c. The CONSULTANT shall revise utility location information after the onsite utility meeting and show all utility adjustments as provided by the utility owners to be included in the 100% submittal.

d. The CONSULTANT shall prepare Utility Adjustment Sheets, Notes and Details necessary to complete the Utility Adjustment Plans.

Task Products include but are not limited to:

< Roadway Plan Sheets.
< Design Notes and Calculations
< A formatted CD with Microstation File.
< Summary of Pay Items.
< Computation Booklet
< Utility Documentation
< A list of all utilities and the phone numbers of all utility contacts present at the intersection.

Sub-Task 30B.1: Additional Turn Lane

An Additional Turn Lane is to be designed at the intersection.

Sub-Task 30B.2: Median Modification

The intersection is to be modified for a directional crossover or similar improvement.

Sub-Task 30B.3: Loops and Loop Lead-ins

The roadway plan sheet is to include loops and loop lead-ins in the area of the turn lane at the intersection.

Sub-Task 30B.4: Minor Drainage Design

The roadway plan sheet is to include minor drainage component rework utilizing appropriate drainage pay items as contained in the push button construction contract. Examples of such work would include extending culverts, moving inlets, etc. in the in the area of the turn lane at the intersection.

Task 30C: GEOTECHNICAL SERVICES

The CONSULTANT shall provide geotechnical services as specified in this section at the request of the Design Project Manager.

The CONSULTANT shall be responsible for a geotechnical investigation as specified hereinafter. All work performed by the CONSULTANT shall be in accordance with DEPARTMENT standards, the Soils and Foundations Manual, related directives, Federal Highway Administration Checklist and Guidelines for review of Geotechnical Reports and Preliminary Plans and Specifications. Florida Department of Transportation Standard Indexes for Work Zone Traffic Controls and Pavement Coring and Evaluation Procedure. The District Geotechnical Engineer will make all determinations regarding the DEPARTMENT geotechnical standards, policies and procedures. Prior to beginning the investigation and after the Notice to Proceed is given, the CONSULTANT shall submit an investigation plan for approval and meet with the DEPARTMENT'S Geotechnical Engineer or representative to review the project scope and Florida Department of Transportation requirements. The investigation plan shall include, but not be limited to, the proposed boring locations and depths, and all existing geotechnical information from available sources to generally describe the surface and subsurface conditions of the projects site.

The CONSULTANT shall notify the DEPARTMENT in adequate time to schedule a representative to attend all related conferences.

1. Field Investigation - Roadway
   The soils investigation for roadways shall be prepared with the following guidelines and in agreement with the District Geotechnical Engineer.

   (a) One 2 meter auger boring per 25 meters per lane pair. Borings shall be performed along the proposed roadway alignment, proposed detour alignments, approaches to structures and any affected portions of side-streets. (New construction and widening of 1.8 meters or greater.)

   (b) One 6 meter auger boring per 150 meters of alignment if an enclosed storm sewer system is proposed.

   (c) Soil samples for laboratory soil testing will be obtained on a minimum frequency of 2 samples per stratum per kilometer.

   (d) LBR samples shall be obtained at a frequency of 2 per km per stratum.

   (e) A minimum of two borings with a minimum depth of 6m below the deepest elevation of the pond per 4000m^2 of pond and a minimum of two field permeability tests per pond or one field permeability test per 4000m^2 of pond (whichever is greater). The tests should be evenly distributed between the anticipated confining strata and the anticipated permeable strata.

(f) Double ring infiltrometer tests, as necessary, for proposed swale areas.

(g) Auger borings and permeability tests (exfiltration) as necessary in exfiltration trench areas.

(h) Use U.S.G.S. and S.C.S. maps to identify areas of organic soils.

(i) Determine the vertical and horizontal extent of compressible strata (i.e., muck, peat, clay, etc.).

(j) Pavement cores will be obtained as directed at the scope meeting.

2. Field Investigation - Structures

The geotechnical investigation for structural foundations includes bridges, temporary and permanent retaining walls, temporary and permanent sheet-piling, major sign and signal foundations, and high embankment fills, as required. The investigation shall be prepared with the following guidelines and in agreement with the District Geotechnical Engineer.

(a) Standard Penetration Test (SPT) borings or Cone Penetration Test (CPT) soundings at each bridge bent/pier location or at the interval of 30 meters.

(b) SPT borings 30 meters behind each abutment as a minimum for exploration of high fill areas.

(c) SPT borings at an interval of 60 meters along proposed retaining wall locations.

(d) At least one SPT boring at proposed major sign and major signal foundations.

(e) SPT borings are to be sampled on 1 meter centers.

(f) Continuous SPT borings to a depth of 5 meters below proposed shallow foundation bearing elevation.

(g) Undisturbed samples of cohesive soils obtained in accordance with Florida Department of Transportation standards.

(h) Rock coring when rock is encountered. A Standard Penetration Test (SPT) shall be performed at the bottom of each core run. Core runs shall not be longer than 2 meters.

(i) Additional specialized field testing as required by needs of project.

Field sampling and testing is also to include the testing of soils, and/or water for the determination of environmental class for the substructure and superstructure.

3. Laboratory Testing

All laboratory testing will be performed in accordance with Florida Sampling and Testing Methods or ASTM or by related directives. Laboratory testing will include the following as required by the needs of the project:

(a) Organic Content

(b) Moisture Content

(c) Sieve Analysis (2.00mm (#10), 0.425mm (#40), 0.250mm (#60) & 0.075mm (#200) for soil survey).

(d) Particle Size Analysis with Hydrometer

(e) Specific Gravity

(f) Torvane Sensitivity

(g) Atterberg Limits for soil classification

(h) Consolidation with an unload/reload cycle near the existing effective overburden pressure

(i) Triaxial and/or direct shear

(j) Corrosion Series at proposed bridges and for new culverts and storm sewers

(k) Limerock Bearing Ratio

(l) Aggregate Gradation

4. Roadway Report

The roadway report for each phase shall include, but not be limited to:

(a) Copies of U.S.G.S. and S.C.S. maps with project limits and beginning/ending station shown.

(b) A preliminary report of tests sheet which summarizes the laboratory test results, the soil stratification (i.e., soils grouped into layers of similar materials) and construction recommendations relative to the FDOT Standard Indexes.

(c) Design LBR

(d) A description of the site and subsoil conditions, design recommendations and a discussion of any considerations (i.e., removal of unsuitable material, recompression of weak soils, estimated settlement time/amount, groundwater control, etc.).

(e) Evaluation of embankment slope stability and settlement.

(f) An appendix which contains stratified soil boring profiles, laboratory test data sheets, design LBR calculation/graphs, and any other pertinent information.

In addition to the roadway report the CONSULTANT will also plot the stratified boring profiles on the original roadway cross-sections and have the geotechnical subconsultant review for completeness. A preliminary roadway report shall be submitted to the District Geotechnical Engineer for review prior to incorporation of the CONSULTANT'S

recommendations in the project design.

5. Structures Report

The structures report shall contain the following discussions as appropriate for the assigned project phase:

(a) Summary of structure background data.

(b) Evaluation of structure foundation alternatives including the following:

(1) spread footing

(2) prestressed concrete piling - various sizes

(3) drilled shafts - various sizes and

(4) Steel H and pipe piling

(5) other feasible foundation types.

(c) Recommendation for most practical foundation types will be given along with the basis for selection.

(d) Analysis of allowable and/or ultimate foundation capacity and settlement potential for all feasible alternatives. Foundation capacity analyses shall be performed using FDOT approved methods. For pile and drilled shaft foundations, provide graphs of design and/or ultimate soil resistance versus tip elevations and preliminary installation table. (Adjusted for scour or downdrag if necessary.)

(e) Analyses of lateral load capacities versus deflection will be performed by the structural engineer. The geotechnical engineer will provide a table containing all geotechnical input parameters necessary for the analyses. After the analyses are completed, the structural engineer will send the analyses to the geotechnical engineer for review and comment. The geotechnical engineer will verify that the geotechnical portion of the model is correct.

(f) Preliminary evaluation of external stability for conventional retaining walls and mechanically/reinforced earth wall systems in accordance with the *Structures Design Guidelines*.

(g) Evaluation of embankment slope stability and settlement.

(h) Evaluation of sheet piling or other temporary wall systems, if necessary.

(i) Preliminary of core boring sheet, including environmental classification and specialized construction requirements.

(j) Summary of soil test results.

(k) Evaluation of lateral earth pressures on underground structures (i.e., box culverts, retaining wall, etc.).

(l) Evaluation of shallow foundations shall include a graph of allowable bearing capacity versus footing width, and recommendations of minimum footing width and minimum embedment depth. Anticipated foundation settlements shall be discussed.

(m) Evaluation of anticipated effects from vibration due to driving of any proposed new piling adjacent to existing structures and/or utilities. This evaluation should also consider the effects of future pile driving operations. If piling for future widening will be required in close proximity to proprietary retaining walls, this piling shall be installed in advance of these walls. The CONSULTANT shall provide recommendations relative to measures to be taken to monitor, reduce and mitigate construction vibration which may affect surrounding facilities.

(n) Construction information addressing the following items:

(1) Estimated maximum driving resistance anticipated for pile foundations.

2) Recommendations for footing or shaft installation, or other site preparation soils-related construction considerations with plan sheets as necessary.

(o) Preliminary draft special provisions required for construction that are not addressed in the DEPARTMENT'S standard specification.

(p) An Appendix which includes SPT boring profiles, data from any specialized field tests, laboratory test data sheets, engineering analysis notes/sample calculations, a complete FHWA check list and any other pertinent information.

A preliminary structures report shall be submitted to the District Geotechnical Engineer for review prior to incorporation of the CONSULTANT'S recommendations in the project design.

If a geotechnical subconsultant's internally generated computer program has been approved for use and is used in the design process, the following additional items will also be included in the report submittal:

(1) An example hand calculation verifying the results of the geotechnical subconsultant's internally generated computer programs (if used) shall be included in the calculations package.

(2) A copy of the geotechnical subconsultant's program and the computer input data files on a formatted CD.

6. Final Analysis and Report for Geotechnical Work

The Final Geotechnical Reports will incorporate comments of the Florida Department of Transportation District Geotechnical Engineer and contain any additional field or laboratory test results, recommended preliminary foundation alternatives along with design parameters and special provisions for the construction plans. These reports will have been submitted to the District Geotechnical Engineer for review prior to completion of the Bridge Development

Report. After review by the District Geotechnical Engineer, the reports will be submitted in a final form that will include the following:

(a) All original plan sheets

(b) One set of reproducible mylars

(c) Two sets of record prints

(d) Six sets of any special provisions

(e) Four copies of roadway reports
(f) All reference and support documentation used in preparation of contract plans package

(g) Six copies of final structures report

(h) One bound copy of all calculations whose results are presented in the final roadway report and the final structures report. The calculations package shall include printed computer input data, printed computer output data, computer input data files on CD, the consultant's reasoning for design assumptions and hand calculations.

7. PLANS REVIEW

The prime CONSULTANT shall provide the geotechnical consultant the opportunity to review plans as they are being developed. The opportunity for formal plans review will occur at all review phases. The geotechnical consultant's comments and their response/resolution shall be included with each level of the plans submitted for review. The geotechnical work effort will not be considered complete until the plans review comments and their resolutions meet the approval of the District Geotechnical Office.

Task Product: Geotechnical services as described at one location (one boring).

Sub-Task 30C.1: Additional Geotech Design Services

Geotechnical services are required at one (1) additional location (additional boring).

Sub-Task 30D: STRUCTURAL DESIGN SERVICES

The CONSULTANT shall provide the structural design as specified in this section at the request of the DTOE. Compensation under this item shall be paid per signal support pole consisting of: (1) signal support structural design, including one (1) foundation for same structure.

The CONSULTANT is responsible for providing and submitting the complete structural design for the foundation. The design of a mast arm signal support drill-shaft foundation shall be in consideration of a wind load equal to the greater of 100 mph for overturning and 70 mph for torsion, plus a 30% gust factor at all locations throughout the District.

The CONSULTANT is responsible for providing and submitting the complete structural design for the signal support pole. The Contractor shall design the signal support poles according to the Roadway and Traffic Design Standards, Standard Specifications for Road and Bridge Construction, MUTCD, Minimum Specifications for Traffic Control Signals and Devices, FDOT Standard

Drawings for Mast Arms and Mast Arm Program. The work shall also be in accordance with AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals", and FDOT Structures Design Guidelines. The work shall also be in accordance with relevant Policy Statements, Memorandums and Implementation Guidelines published by the Department. The above described information is available through the District Structures Office.

Task Product: Structural design services for plans preparation consisting of one (1) signal support structural design, including one (1) foundation for same structure.

Sub-Task 30D.1: Additional Structural Design Services

Structural design services are required at one (1) additional pole location.

Task 31: COMPOSITE COMBINATION 1

This task is comprised of an 8 hour turning movement count with Tasks 4, 8, 14, 23 and 28.

Task Product: The assembled products of the named tasks.

Task 32: COMPOSITE COMBINATION 2

This task is comprised of a 10 hour turning movement count with Tasks 4, 8, 14, 23 and 28.

Task Product: The assembled products of the named tasks.
I.
Task 33: COMPOSITE COMBINATION 3

This task is comprised of a 12 hour turning movement count with Tasks 4, 8, 14, 23 and 28.

Task Product: The assembled products of the named tasks.

Task 34: COMPOSITE COMBINATION 4

This task is comprised of an 8 hour turning movement count with Tasks 4, 14 and 28.

Task Product: The assembled products of the named tasks.

Task 35: COMPOSITE COMBINATION 5

This task is comprised of a 10 hour turning movement count with Tasks 4, 14 and 28.

Task Product: The assembled products of the named tasks.

Task 36: COMPOSITE COMBINATION 6

This task is comprised of a 12 hour turning movement count with Tasks 4, 14 and 28.

Task Product: The assembled products of the named tasks.

Task 37: HIGHWAY LIGHTING JUSTIFICATION

A highway lighting justification shall be performed in accordance with Chapter XIV of the MUTS Manual. The CONSULTANT shall retrieve collision data from the Department's database. Should supplemental collision data be necessary, the consultant will be responsible for collecting this data which will be paid for under a separate task (4.15A).

Task Product: Highway Lighting Justification Report.

Task 38: ISOLATED TRAFFIC HAZARD STUDY

The CONSULTANT shall determine at one (1) individual location if a hazard to bicycle, pedestrian, or vehicular traffic exists, and if so, recommend appropriate, fiscally feasible countermeasure(s) that will eliminate or mitigate the identified hazard(s). The CONSULTANT shall investigate the location to determine the nature of the hazard(s). This should include an initial field review to determine what data is needed to substantiate the hazard(s). The data can be in the form of crash reports testifying to the hazard(s) and/or observation of divergence from acceptable standards in either the FDOT's "Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways", "Roadway and Traffic Design Standards", "Roadway Plans Preparation Manual", "Manual of Uniform Traffic Control Devices", and other applicable sources by having color photographs, sketches, and/or videos as necessary to show the hazard(s). This data shall be produced for subsequent use by the Department for inclusion in a Conceptual Report.

Task Product: Identification of hazard(s)
Recommended countermeasure(s)
Supporting data

TASK 39: ARTERIALLY RELATED TRAFFIC HAZARD STUDY

The CONSULTANT shall determine if a hazard(s) exists along or associated with an arterial. If a hazard(s) to pedestrian, bicycle, or vehicular traffic is found, appropriate, fiscally feasible countermeasure(s) are to be developed that will eliminate or mitigate the hazard(s). This should include an initial field review to determine what data is needed to substantiate the hazard(s). The data can be in the form of crash reports testifying to the hazard(s) and/or observation of divergence from acceptable standards in either the FDOT's "Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways", "Design Standards", " Plans Preparation Manual", "Manual of Uniform Traffic Control Devices", and other applicable sources by having color photographs, sketches, Transview aerial imagery, and/or videos as necessary to show the hazard(s). This data shall be produced for subsequent use by the Department for inclusion in a Conceptual Report.

Task Product: Identification of hazard(s)
Recommended countermeasure(s)
Supporting data.

TASK 40: AREA WIDE SPECIFIC TYPE HAZARD STUDY

General

For this task, specific scope requirements and compensation terms shall be negotiated on a "per Work Order" basis.

The CONSULTANT shall locate in a specified geographical area a previously identified type(s) of hazard. The CONSULTANT shall perform a field review in the geographical area defined, and locate each specific location where the pre-identified hazard(s) exists. The individual locations will

be enumerated and quantified and special features or conditions noted. Color photographs, sketches, Transview aerial imagery, and/or videos should be taken of any individual location which has some unique or unusual characteristics that need to be shown.

Task Product: List of enumerated and quantified locations
Supporting photographs, sketches, Transview aerial imagery and/or videos.

TASK 41: BENEFIT-COST ANALYSIS

A Benefit-Cost Analysis shall be performed in accordance with the "HSIPG", section 2.1.5 in conjunction with Florida Crash Reduction rates and the current cost per crash tables on Form 511-09 from the "HSIPG".

Task Product: Benefit-Cost Analysis

TASK 42 SUBSURFACE UTILITY EXPLORATION (SUE)

This scope of work contains subsurface utility exploration for which the CONSULTANT will be issued work orders. The work tasks associated with subsurface utility exploration are as follows:

SUE Task 42 - Subsurface Utility Exploration Service
Sub Task 42A - Additional Pole Location
Sub Task 42B - Concrete/Asphalt Removal and Restoration
Sub Task 42C - Night Work Per Pole Location
Sub Task 42D - Off-Duty Police Officer On-Site Per Pole Location
Sub Task 42E - Arrow Board (Trailer) Per Pole Location
Sub Task 42F - Flagman Control Per Pole Location

DESCRIPTION OF SUBSURFACE UTILITY LOCATING (TEST HOLE) SERVICE

This section describes the subsurface utility locate task and the work required in each task and 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 pole locations to be identified by the CONSULTANT.

Upon forty-eight (48) hours of verbal notification (followed by a faxed copy of a written work order), the CONSULTANT will be available to begin subsurface utility locating for the purpose of signal pole placement.

The CONSULTANT shall be responsible for providing subsurface utility locating (test hole) services for the purpose of placing signal poles in locations so as not to conflict with the existing utilities. The CONSULTANT shall coordinate with the local utilities, municipalities, maintaining agency, and the DEPARTMENT while obtaining any necessary permits to allow the CONSULTANT to work in existing streets, roads, etc. The CONSULTANT shall call in utility locates for 400 feet from the back of the stop bars on the main line and for 100 feet from the back of stop bars on the side street. The CONSULTANT shall set up an on-site utility meeting with all involved parties prior to beginning the excavation (test holes).

The subsurface utility locating (test hole) service is to verify the appropriate placement of signal poles prior to the design process. In this way, construction can begin immediately after the design and review.

TASK 42: SUBSURFACE UTILITY LOCATING (TEST HOLE) SERVICE

The CONSULTANT is to obtain and verify the location of one signal pole by excavation. The CONSULTANT is to excavate using a method enabling vertical, as well as horizontal exploration through the cut. The excavation should occur in such a manner as to prevent any damage to wrappings, coatings, or other protective coverings, such as by a vacuum excavation method, hand digging, etc. The CONSULTANT will be responsible for any damage to the utility structure during the excavation. After the excavation is complete, the CONSULTANT will backfill and compact with select material found around the utility structure.

The subsurface utility locating (test hole) service is complete when the location for one (1) signal pole has been agreed upon by the DEPARTMENT.

Task Product

X The precise proposed location of the poles indexed to existing landmarks shown on a plan sheet.

Sub Task 42A: Additional Pole Location

An additional pole location is to be determined at the same intersection. This location is to be verified using the requirements established in Task 1.

Sub Task 42B: Concrete/ Asphalt Removal and Restoration

In the event that it becomes necessary to remove concrete or asphalt in order to excavate, the CONSULTANT will neatly cut and remove the existing pavement by cutting an area not to exceed 225 square inches.

At the completion of the excavation, the CONSULTANT will provide complete restoration of the pavement, within the limits of the original cut at the time of backfill.

Task Products

X Concrete or asphalt restored to original appearance

Sub Task 42C: Night Work Per Pole Location

Should the consultant be required to work at night, this sub task will include all additional costs necessary for night work per pole location.

Task Products

X Subsurface excavation accomplished at night

Sub Task 42D: Off-Duty Police Officer On-Site Per Pole Location

To include the costs necessary to have an off-duty police officer present with a marked police car during the subsurface utility locating (test hole) service for one (1) pole location.
Task Product

X Off-Duty Officer present on-site for the duration necessary to determine the location for one pole.

Sub Task 42E: Arrow Board (Trailer) Per Pole Location

To include the costs necessary to have an arrow board mounted on a trailer present during the excavation at one (1) pole location.

Sub Task 42F: Flagman Control Per Pole Location

To include the costs necessary to have a flagman present during the excavation at one (1) pole location.

TASK 43: DEVELOPMENT OF COMMUNITY AWARENESS PLAN (CAP)

General

Compensation for tasks issued under this item shall be negotiated on a case by case basis. Work Orders to be issued under this task may include but are not limited to the following:

Development of Community Awareness Plan (CAP)

The CONSULTANT will prepare a Community Awareness Plan in accordance with Department Guidelines. The objective of the plan is to notify local governments, affected property owners, tenants, and the public of the DEPARTMENT'S proposed construction and the anticipated impact of that construction. In addition to the benefits of advance notification, the process should allow the DEPARTMENT to resolve controversial issues during the design phase. Three areas of specific concern are: (1) Influences on access to businesses, (2) Drainage, (3) Maintenance of Traffic during construction.

Public Information Meeting

The CONSULTANT shall provide all support necessary for the DEPARTMENT to hold a Public Information meeting.

1. The CONSULTANT shall prepare and/or provide:

   A. Agenda for the presentation.
   B. Provide three (3) sets of roadway plans for information purposes.
   C. Letters for notification of elected and appointed officials.
   D. Letters for notification to impacted residences/tenants/owners.
   E. News releases, for use three (3) to five (5) days prior to the meeting.
   F. Informational Brochures

2. The purpose of this meeting is to notify the public of the upcoming construction project and anticipated inconveniences which will occur.

   This meeting will be advertised and conducted by the CONSULTANT as an information meeting. Any press release will be sent out by the CONSULTANT and will indicate the meeting is a DEPARTMENT activity.

Both the CONSULTANT'S and DEPARTMENT'S responsibilities are specified for meetings as follows:

A. A copy of the agenda including the project number, date, meeting place, and items to be addressed shall be submitted to the Design Project Manager, the District Public Information Director, and incorporated into the project Community Awareness Plan (CAP).

B. All media releases and general (mass) public announcements for property owners and business operators will be prepared by the CONSULTANT and reviewed by the DEPARTMENT'S Public Information Director and the Design Project Manager.

C. Notification will be made to elected and appointed officials by personal letter. This letter shall be prepared by the CONSULTANT for the District Design Engineer's signature. This notification shall be mailed by the CONSULTANT no less than 15 days before the meeting. Letters shall be on DEPARTMENT letterhead.

D. Property Owner/Business Operator Notification - An announcement, prepared by the CONSULTANT, will be written and sent no less than 10 days before the meeting to all property owners/business operators whose property or business lies adjacent to the project limits. The CONSULTANT shall utilize Direct Mail Services, Tax Collector Office and/or any other source to identify and obtain the address of property owners and business operators along the project. The CONSULTANT will pay for the postage.

E. News releases will be prepared by the CONSULTANT and shall be published during the week of the Public Information Meeting. Two (2) newspaper ads will be published, the first shall be seven days in advance of and the second will be the day before the meeting date. This shall be developed by the CONSULTANT and approved by the DEPARTMENT. The CONSULTANT shall pay for the ad.

F. The meeting will be a panel or round table meeting where the CONSULTANT shall conduct the meeting. The CONSULTANT will provide an overview/description of the type of work to be done, impacts to the businesses, and the Maintenance of Traffic Scheme. The public will then have the opportunity to ask questions. The meeting is anticipated to be approximately one hour in length.

G. The CONSULTANT shall provide three (3) sets of the roadway plans. The meeting will require a knowledgeable CONSULTANT staff to answer questions that may arise.

H. The CONSULTANT shall coordinate all activities listed and actions to be taken with the Department's Public Information Director and the Project Manager.

I. The Public Information Meeting shall be done at the 100% plan stage or as a Post Design Service.

3. Public Involvement Data Collection

The CONSULTANT will collect the following data:

A. Mailing list preparation. This process involves the identification of any affected, possibly affected, and interested parties early in the study process. Media in the project

area will be identified and placed on the mailing list to be used for news releases, advertisements or any concerns. The mailing list of officials and interested parties will also include any person or institution expressing an interest in the project. The mailing list will be submitted to the DEPARTMENT for review or approval. Information from this list will also be used in the CAP plan.

B. Elected and appointed officials (city, state, federal, county) and community leaders in the area will be identified and placed on the mailing list of officials and interested parties. This will include as applicable (but not limited to):

-U.S. & State Representatives-Mayor

-MPO Members	-County Commissioners
-City Commissioners	-County Sheriff
-Chief of Police	-Civil Defense Director
-PTA President	-School Board Chairman
-Ambulance Services	-Fire Chief or Commissioner
-Florida Highway Patrol	-other stakeholders

The CONSULTANT shall be responsible for determining the appropriate meeting site. Prospective site for meetings to be held will be inspected for suitability. Consideration shall be given to capacity, lighting, and other physical characteristics which would influence the selection of the site. The site shall meet ADA standards.

Room size will be based on the number of mail outs. The proposed meeting site shall be presented to the DEPARTMENT for approval prior to the CONSULTANT negotiating use of site.

Business Owner's Meeting

The CONSULTANT shall provide all support necessary for the DEPARTMENT to hold a Business Owner's meeting.

1. The CONSULTANT shall prepare and/or provide:

   A. Agenda for the presentation.
   B. Provide three (3) sets of roadway plans for information purposes.
   C. Prepare graphics and displays as directed by the Project Manager.
   D. Letters for notification to impacted tenants and owners.

2. The purpose of this meeting is to present to the business owners the results of the detailed design for SR XX.

   Both the CONSULTANT'S and DEPARTMENT'S responsibilities are specified for meetings as follows:

   A. A copy of the agenda including the project number, date, meeting place, and items to be addressed shall be submitted to the Design Project Manager, the District Public Information Director, and incorporated into the project Community Awareness Plan.

   B. Business Owner/Operator Letters. A personal letter prepared by the CONSULTANT for the District Design Engineer's signature will be sent by the CONSULTANT no less

than 10 days before the meeting to all business owners/business operators whose property of business lies along the project limits. The CONSULTANT shall utilize Direct Mail Services, Tax Collector Office and/or any other source to identify and obtain the address of property owners and business operators along the project. The CONSULTANT will pay for the postage. All letters shall be on DEPARTMENT letterhead addressed from the District Design Engineer.

C. The meeting will be a panel or round table meeting where the CONSULTANT shall conduct and provide an overview/description of the project. The overview will include the type of work to be done, impacts to the businesses, and the Maintenance of Traffic scheme. The owners will have the opportunity to ask questions. The meeting is anticipated to be approximately one hour in length.

D. The CONSULTANT shall prepare displays or wall graphics for use during the meeting. These include roadway plan layouts, charts, graphs, and visual imaging as needed. A summary handout package is required in addition to other visual aids. All displays and graphics will be reviewed by the DEPARTMENT prior to the meeting.

Displays or wall graphics shall include but not limited to the following:

* 1-(36"X 24") foam board displaying a computer enhanced photograph utilizing an existing conditions photo to reflect proposed conditions.

  Shall be raster drawings, to scale aerial photos, or colored CADD drawings with the following information:

  1) existing right-of-way lines
  2) proposed right-of-way lines
  3) proposed pavement markings (pavement should be black or gray with the correct color of pavement markings (white or yellow)
  4) existing structures adjacent to the roadway (homes, businesses, etc.)
  5) proposed driveway and median openings
  6) proposed ponds designated as wet or dry.

  All displays may depict the Consultant logo but **shall** also depict the DEPARTMENT'S logo.

E. If issues are identified at the meeting, their significance will be determined by the CONSULTANT and the DEPARTMENT; i.e., are the issues valid enough that require any action.

F. Addressing the issues and responding to them is also an integral part of the meeting process. This is to be accomplished by the CONSULTANT. The DEPARTMENT shall review and approve all response letters prior to mailing.

G. The CONSULTANT shall coordinate all activities listed and actions to be taken with the Department's Public Information Director and the Project Manager.

3. Public Involvement Data Collection

The CONSULTANT will collect the following data:

* Mailing list preparation. This process involves the identification of any affected or possibly affected business owners early in the study process. The mailing list of officials and interested parties will also include any person or institution expressing an interest in the project. The mailing list will be submitted to the DEPARTMENT for review or approval. Information from this list will also be used in the CAP plan.

The CONSULTANT will assist the DEPARTMENT in preparing responses to any business owner inquiries as a result of the public involvement process.

The CONSULTANT shall be responsible for determining the appropriate meeting site. Prospective site(s) for meetings to be held will be inspected for suitability. Consideration shall be given to capacity, lighting, and other physical characteristics which would influence the selection of the site. The site shall meet ADA standards.

Room size will be based on the number of mail outs. The proposed meeting site shall be presented to the DEPARTMENT for approval prior to the CONSULTANT negotiating use of site.

Public Information Workshop

The CONSULTANT shall provide all support necessary for the DEPARTMENT to hold a Public Information meeting.

1. The CONSULTANT shall prepare and/or provide:

   A. Script or agenda for the presentation.
   B. Prepare graphics and displays as directed by the Project Manager.
   C. Meeting equipment set-up and tear-down.
   D. Legal and/or display advertisements. The CONSULTANT will pay the cost of publishing.
   E. Draft letters for notification of elected and appointed officials.
   F. News releases, for use three (3) to five (5) days prior to meeting.

2. The purpose of this meeting is to present to the public the results of the detailed design for the multilaning of SR XX.

   This meeting will be advertised and conducted by the CONSULTANT as an information meeting. The CONSULTANT will prepare all necessary displays, maps, handouts, etc., as explained below. The CONSULTANT will actively participate in all portions of the presentation.

   Any press release or advertisement will indicate that the meeting is a DEPARTMENT activity.

   Both the CONSULTANT'S and DEPARTMENT'S responsibilities are specified for meetings as follows:

   A. All graphics, media releases, and general (mass) public announcements will be prepared by the CONSULTANT and reviewed and authorized by the DEPARTMENT.

B. A copy of the agenda including the project number, date, meeting place, and items to be addressed shall be submitted to the Design Project Manager to be incorporated into the project Community Awareness Plan (CAP).

C. Notification will be made to elected and appointed officials by personal letter. This letter shall be prepared by the CONSULTANT for the District Design Engineer's signature. This notification shall be mailed by the CONSULTANT no less than 15 days before the meeting. Letters shall be on DEPARTMENT letterhead.

D. Property Owner Letters/Business Operators Notification - An announcement, prepared by the CONSULTANT, will be written and sent no less than 10 days before the meeting to all property owners/business operators whose property or business lies in whole or in part within 300 feet of the centerline of the project. The CONSULTANT shall utilize Direct Mail Services, Tax Collector Office and/or any other source to identify and obtain the address of property owners and business operators along the project. The CONSULTANT will pay for the postage.
The mail out shall depict a straight line diagram showing the limits of the project and a brief description of the project.

The announcement shall be submitted to the design Project Manager, the Public Information Director, and incorporated into the Community Awareness Plan (CAP).

E. News releases will be prepared by the CONSULTANT and submitted to the DEPARTMENT for publication during the week of the Public Information Meeting. Two (2) newspaper display ads will be published, the first shall be seven (7) days in advance of and the second will be the day before the meeting date. This shall be developed by the CONSULTANT and approved by the DEPARTMENT. The CONSULTANT shall pay for the ad.

F. The meeting format will be informal allowing the public to come and go.

G. The CONSULTANT shall prepare displays or wall graphics for use during the meeting. These include typical sections, roadway plan layouts, charts, graphs, and visual imaging as needed. A summary handout package is required in addition to other visual aids. All displays and graphics will be reviewed by the DEPARTMENT prior to the meeting.

Displays or wall graphics shall include but not limited to the following:

* 1- (36"X 24") foam board displaying a typical section. The drawing shall be in color with computer images of automobiles, bicycles, and pedestrians occupying the designated travel areas.

* 1-(36"X 24") foam board displaying a computer enhanced photograph utilizing an existing conditions photo to reflect proposed conditions. For intersection projects, 2 computer enhanced photographs for intersection projects are required.

* Project plan view shall be on (36"X 24") foam boards. For projects of substantial length, projects can be rolled out on tables or placed on the wall. The photo or roll-outs shall be 1:600 raster drawings, to scale aerial photos, or colored CADD drawings with the following information:

1) existing right-of-way lines
2) proposed right-of-way lines
3) proposed pavement markings (pavement should be black or gray with the correct color of pavement markings (white or yellow)
4) existing structures adjacent to the roadway (homes, businesses, etc.)
5) proposed driveway and median openings
6) proposed ponds designated as wet or dry.
7) designation of proposed signalized intersections.

All displays may depict the Consultant logo but **shall** depict the DEPARTMENT'S logo.

H. Briefing of the Design staff by the CONSULTANT (who will be on hand during the meeting) will be done twice. The first time is to be at least seven days prior to the meeting and the second time will be just before the meeting to make sure the staff is up to date on the project and understands the project well enough to discuss it with the public and to answer questions.

I. Meeting equipment setup and tear down will be handled by the CONSULTANT staff members.

J. Conducting the meeting will take knowledgeable CONSULTANT staff and will require enough staff members to handle the crowd anticipated for the meeting. Although the meeting is scheduled for a two (2) hour period, the CONSULTANT staff will be available for some time before and/or after those set hours in order to maintain public contact, etc.

The CONSULTANT shall also provide office support personnel to ensure attendees register (CONSULTANT must provide a sign-in sheet with space available for the person's name, address, and telephone number).

K. If issues are identified at the meeting, their significance will be determined by the CONSULTANT and the DEPARTMENT; i.e., are the issues valid enough for further consideration or do they have elements which may require further consideration.

L. The CONSULTANT shall provide self-addressed comment forms to allow attendees to provide written comments within 10 days after the Public Information workshop.

M. Addressing the issues and responding to them is also an integral part of the meeting process. This is to be accomplished by the CONSULTANT. The DEPARTMENT shall review and approve all response letters prior to mailing.

N. The CONSULTANT shall coordinate all activities listed and actions to be taken with the Department's Public Information Director and the Project Manager.

3. Public Involvement Data Collection

The CONSULTANT will collect the following data:

* Mailing list preparation. This process involves the identification of any affected, possibly affected, and interested parties early in the study process. Possible permit and review agencies will be identified and placed on the mailing list of officials and interested parties. Media in the project area will be identified and placed on the mailing list to be used for news releases, advertisements or any concerns. The mailing list of officials and interested parties will also include any person or institution expressing an interest in the project. The mailing list will be submitted to the DEPARTMENT for review or approval. Information from this list will also be used in the CAP plan.

* Elected and appointed officials (city, state, federal, county) and community leaders in the area will be identified and placed on the mailing list of officials and interested parties. This will include as applicable (but not limited to):

-U.S. & State Representatives-Mayor

-MPO Members	-County Commissioners
-City Commissioners	-County Sheriff
-Chief of Police	-Civil Defense Director
-PTA President	-School Board Chairman
-Ambulance Services	-Fire Chief or Commissioner
-Florida Highway Patrol	

In addition to collecting public input data, the CONSULTANT will assist the DEPARTMENT in preparing responses to any public inquiries as a result of the public involvement process.

The CONSULTANT shall be responsible for determining the appropriate meeting site. Prospective sites for meetings to be held will be inspected for suitability. Consideration shall be given to capacity, lighting, and other physical characteristics which would influence the selection of the site. The site shall meet ADA standards.

Possible public meeting sites should be catalogued. Sites which have characteristics more suitable to a public hearing (than an information meeting) shall be catalogued. Room size will be based on the number of mail outs. Rooms should have adequate wall space (to display photos) relative to the length of the project. The proposed meeting site shall be presented to the DEPARTMENT for approval prior to the CONSULTANT negotiating use of site.

TASK 44: MISCELLANEOUS ITEMS

GENERAL

This task shall involve items that are generally difficult to anticipate at the initiation of a work order. Compensation for tasks issued under this item shall be negotiated on a case by case basis. Work Orders to be issued under this task may include but are not limited to the following:

PLANS UPDATE AND MAINTENANCE

The CONSULTANT shall perform engineering analyses and/or make revisions to original reproducibles or special provisions, as requested by the DEPARTMENT, to reflect additions,

deletions and/or modifications prior to and subsequent to letting. Whenever original reproducibles are changed, the CONSULTANT shall submit to the DEPARTMENT one (1) set of signed and sealed prints of the revised sheets with the revised reproducibles. This requirement is in addition to any other reproduction and delivery instruction given by the DEPARTMENT in specific instances.

POST-DESIGN SERVICES

These services are intended to address changed conditions that occur following acceptance of final plans. The CONSULTANT shall provide to the DEPARTMENT additional services as required to satisfactorily complete construction. These services are intended to deal with changed conditions or services not covered and is not intended for instances of CONSULTANT errors and/or omissions. The fee(s) for these services shall be established if and when said services are required.

CONSTRUCTION ASSISTANCE

The CONSULTANT shall provide to the DEPARTMENT qualified representation during the construction phase to deal with issues concerning the intent and interpretation of the construction contract plans and documents prepared in the work. Should changed conditions be encountered in the field and when requested by the DEPARTMENT, the CONSULTANT shall respond in a timely manner with suitable engineering solutions which take into account the changed conditions.

On site appearance of CONSULTANT shall be made during construction at the written request of the DEPARTMENT or its designated representative.

From time to time during construction the CONSULTANT may be requested by the DEPARTMENT or its designated representative to review contractor proposed field changes or to respond with a recommended solution to remedy particular field situations not covered by the plans and specifications.

REVIEW OF SHOP DRAWINGS

Shop drawing reviews shall be performed by the CONSULTANT in accordance with Chapter 19 of the Florida Department of Transportation Structures Design Guidelines.