

**Lee County Board Of County Commissioners  
Agenda Item Summary**

**Blue Sheet No. 20050489**

**1. ACTION REQUESTED/PURPOSE:** Approve Supplemental Task Authorization No. 1, Contract 2472 to Gray-Calhoun and Associates in the amount of \$105,319.18, under CN-03-04, Miscellaneous Traffic Engineering Services.

**2. WHAT ACTION ACCOMPLISHES:** Allow Gray-Calhoun and Associates to complete the Intelligent Transportation Systems design for a section of Summerlin Road from Cypress Lake to Boy Scout.

**3. MANAGEMENT RECOMMENDATION:** Recommends approval.

<b>4. Departmental Category:</b> 09 <span style="margin-left: 100px;"><i>CQA</i></span>		<b>5. Meeting Date:</b> <i>05-03-2005</i>
<b>6. Agenda:</b> <input checked="" type="checkbox"/> Consent <input type="checkbox"/> Administrative <input type="checkbox"/> Appeals <input type="checkbox"/> Public <input type="checkbox"/> Walk-On	<b>7. Requirement/Purpose: (specify)</b>	
	<input type="checkbox"/> Statute	
	<input type="checkbox"/> Ordinance	
	<input checked="" type="checkbox"/> Admin. Code	AC 4-4
	<input type="checkbox"/> Other	
		<b>8. Request Initiated:</b> Commissioner _____ Department Transportation Division _____ By: <u>Scott Gilbertson, Director</u>

**9. Background:**  
On April 15, 2003 the Board entered approved contract negotiations with thirteen (13) firms under CN-03-04 to provide professional services involving various Traffic Engineering Services, including designs for Intelligent Transportation Systems devices, at sites in Lee County for County Department and Division projects. Supplemental Task Authorization No. 1 provides professional services for the designs to install field equipment to facilitate necessary management and operations of traffic along Summerlin Road (CR 869) from north of Cypress Lake Drive to south of Boy Scout Drive. The proposed devices will be selected and the locations determined to yield the best overall management and operations of the corridor. Preliminary design concepts include the creation of a coordinated signal system, communication facilities, traffic cameras and message signs. This STA includes task work to produce refined costs and benefits for the systems management and operations plan. Very conservative preliminary estimates of future annual cost savings of at least \$9,507,275 in motorist delay are expected. The timesavings estimates were calculated using conservative assumptions and actual current peak hour volume of traffic on Summerlin Road. Average passenger operating costs of \$16.40 per hour (fuel, maintenance, labor cost) was utilized. Installation of field equipment will take place during the construction phase of Project #6007, Summerlin Road, Boy Scout-Cypress Lake Drive.

Funds will be available in the following account string: 20600718804.06540  
Attachment: Supplemental Task Authorization for Execution Summary of Estimated Cost Savings

**10. Review for Scheduling:**

Department Director	Purchasing or Contracts	Human Resources	Other	County Attorney	Budget Services	County Manager/P.W. Director
<i>[Signature]</i>	<i>[Signature]</i>	NA		<i>[Signature]</i>	<i>[Signature]</i> Analyst Risk Grants Mgr.	<i>[Signature]</i> 4.14.05

**11. Commission Action:**

Approved  
 Deferred  
 Denied  
 Other

Rec. by CoAtty Date: <i>4/15/05</i> Time: <i>4:15</i> Forwarded To: <i>Co. Mgr.</i> <i>4-15-05</i>	RECEIVED BY COUNTY ADMIN. <i>4-15-05</i> COUNTY ADMIN FORWARDED TO: <i>4-20-05</i> <i>[Signature]</i>
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## Summary of Calculations Summerlin Road ITS

### Development of Vehicle Operating Costs

The development of figures associated with vehicle operating costs (voc) are based upon an average hourly cost to provide a base value for developing other costs and savings analysis. The table below describes the source and illustrates the cost basis used for

Vehicle Type	NCHRP 133 (\$/Veh-Hr)
Automobiles	11.78
Single Unit Trucks	19.64
Combination Unit Trucks	19.64

Table 1: User delay costs - value of time

Source: FHWA Report FHWA-SA-98-079, Table 2.7

vehicle-hours. Values are in 1996 dollars.

These values for automobiles are factored to provide adjustment to 2004 costs.

Combinations of factors are used to compute these adjustments based upon information from the US Department of Labor, Bureau of Labor Statistics for transportation

(<http://data.bls.gov/PDQ/servlet/SurveyOutputServlet>) and an average inflation rate. For the adjustments from 2000 to 2004 the CPI for transportation from the Bureau is

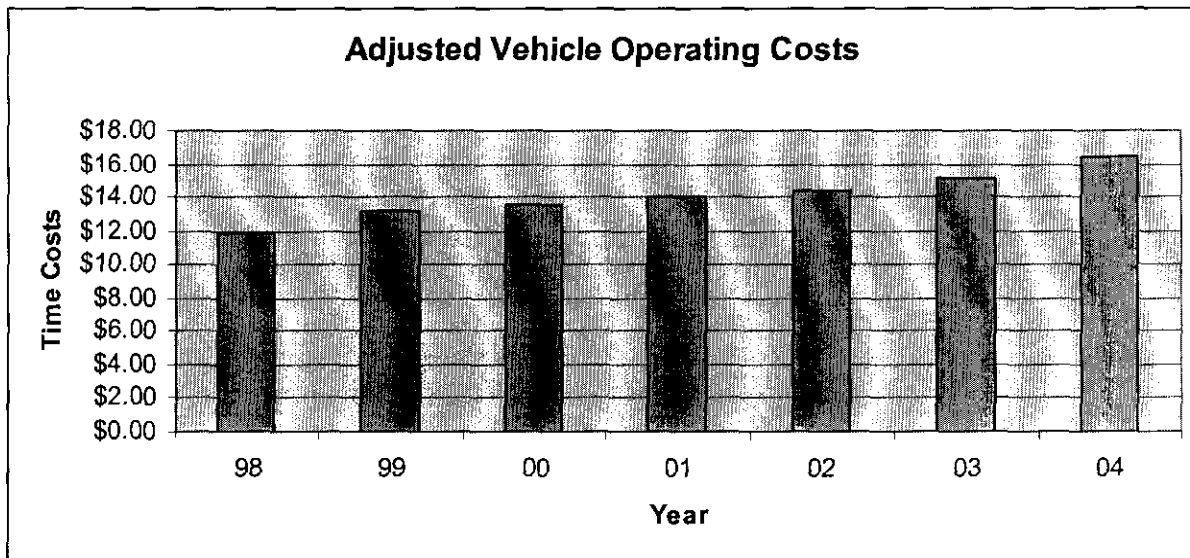
used. An average inflation rate of 3% is used for the years from 1996 to 1999. A

summary of the transportation CPI from the Department of Labor is in the table below.

<b>Series Id:</b> SUVRO0005AT	<b>Item:</b> Transportation
<b>Area:</b> U.S. city average	<b>Base Period:</b> DECEMBER 1999=100
Not Seasonally Adjusted	

Year	Annual
2000	103.0
2001	103.5
2002	102.6
2003	105.3
2004	108.2(U)
U : Interim	

Adjustments to vehicle operating costs are summarized in the chart below and reflect and adjusted cost of \$16.40 for 2004. It is recognized that \$16.40 per hour is a very conservative vehicle operating cost.



## Delay Reduction Estimates

### *Traffic Cameras*

For estimation purposes the frequency of the occurrences is based upon the anticipated average number of complaints or other congestion related concerns. This conservative approach to estimating assumes a baseline incident of 1 hour per week on 1 day and that an average of 100 responses that save travelers about 1/2 hour of delay occur.

Additionally, active monitoring in the peak hours are assumed, providing a faster, more accurate response to all incidents, resulting in a differential savings of approximately 30 minutes net. This approach provides a reasonable basis for computing cost savings due to delay reductions. The comparative time savings to travel to the field to investigate traffic congestion (115 minutes) versus being able to review congestion via traffic cameras (35 minutes) was previously developed.

Using the PM peak, peak season volume of 1633 vehicles for Summerlin Road (PCS #35), the delay costs savings can be estimated as:

$0.5 \text{ hours} \times 1633 \text{ vehicles} = 817 \text{ vehicle-hours of delay savings}$

Using the adjusted FHWA cost values for average passenger vehicles at \$16.40 per vehicle-hour, the total cost savings for the delay reduction can be estimated as:

$750 \text{ vehicle-hours} \times \$16.40 \text{ per vehicle-hours} = \$13,394 \text{ of delay savings.}$

Using the conservative annual estimate of 100 responses for the year, the estimated annual cost savings in reduced motorist delay is \$1,339,400.

### *Variable Message Signs*

Based upon information and research conducted on national ITS studies completed by other agencies, a percentage of travelers surveyed stated that they modified their route as a result of information provided by roadside variable message signs. Recent studies completed in Wisconsin (Ran, Bin et al. Evaluation of Variable Message Signs in Wisconsin: Driver Survey, University of Wisconsin at Madison, May 2002.) showed approximately 72% of survey respondents reported adjusting their travel routes based on the travel time or traffic information provided by variable message signs. This provides an important basis for a conservative estimate of the reduction in delay produced by the utilization of variable message signs. Based upon this study, it can be assumed that about 70% of the drivers in the approach volume will be diverted and avoid the incident delay. This provides a basis for the estimation in delay reduction. The other assumptions are that the installation would be properly engineered and that capacity on the road segment to which traffic is diverted would not be substantially degraded by the added traffic.

For the reduction in incident delay, it is estimated that the incident related delay would be reduced by 70 %.

It is assumed that one incident that benefits from diversion would occur each week. Additionally, the estimated incident delay that would occur without a diversion would add one hour to the drivers involved in the diversion and stuck in traffic. This results in an annual delay of 52 hours without the installation of a VMS to provide en route guidance.

From this assumption the incident delay in vehicle hours can be developed.  
Approach Volume \* 52 hours = Incident Delay (vehicle-hours).

Using the factored PM peak, peak season volume of 1633 vehicles for Summerlin Road, the delay cost savings can be estimated as noted below:

#### Annual Cost Estimates for Incident Scenario

$1633 \text{ veh} * 52 \text{ hours} = 84,916 \text{ vehicle-hours of delay.}$

$84,916 \text{ v-hr} * \$16.40/\text{v-h} = \$1,392,622$

#### Annual Cost Estimates for Diverted Scenario

$0.30 * 1633 \text{ veh} * 52 \text{ hours} = 25,475 \text{ vehicle-hours of delay.}$

$25,475 \text{ v-hr} * \$16.40/\text{v-h} = \$417,787 \text{ annually}$

The cost savings benefit estimation is the difference in the two delay costs. The estimated improvements in incident related user delay costs are approximately \$974,835 over one year.

*Signal Systems*

The Summerlin corridor design will include an interconnected signal system that is projected to provide improved traffic flow along Summerlin. The development of estimated cost savings are based upon simulations in SYNCHRO for the coordinated and non-coordinated operation of the traffic signal at Summerlin and Park Meadows only. The simulations were only run for a typical peak hour and was not completed for the other conventional peak hour periods, such as the AM and Mid-Day. The approach provides a very conservative estimate based upon outputs from the SYNCHRO software.

Additional traffic signals will be installed with the road construction project, however analysis of these signals was not included because the expected improvements are presented as typical improvements in traffic and reduced delay that is anticipated on the corridor. The summary of MOE's for the Free and Coordinated simulation runs are provided in the two tables that follow.

Measures of Effectiveness		FREE Operation		
<hr/>				
<b>Summerlin</b>				
<hr/>				
Direction	NB	SB	AI	
Signal Delay / Veh (s)	47	47	47	
Total Signal Delay (hr)	41	41	82	
Stops / Veh	0.77	0.70	0.73	

The total signal delay for the FREE operation is 82 hours.

Measures of Effectiveness		Coordinated Operation		
<hr/>				
<b>Summerlin</b>				
<hr/>				
Direction	NB	SB	AI	
Signal Delay / Veh (s)	42	49	46	
Total Signal Delay (hr)	37	42	79	
Stops / Veh	0.57	0.67	0.62	

The total signal delay for the coordinated operation is 79 hours.

The estimated savings in delay is 3 hours based upon the SYNCHRO MOES. The estimated cost savings in delay is developed using the 3-hour delay savings.

For the simulation an approach volume of 1462 vehicles was used. This results in a vehicle-hour value of 4386 vehicle-hours. For the total year there is an estimated 100 peaks similar to the SYNCHRO model that are expected to occur. Using the adjusted FHWA vehicle operating costs of \$16.40 provides the following estimate.

$4,386 \text{ v-hr} \times \$16.40 \text{ per vehicle-hours} = \$71,930 \text{ is delay savings.}$

Annually savings is estimated by multiplying the anticipated 100 peaks produces estimated annual delay savings of \$7,193,040.

### *Summary*

The values developed for the estimated cost savings, accrued by all motorists, resulting from reductions in motorist delays are summarized in the following table. The conservative annual cost savings are estimated to be \$9,507,275.

#### Summary of Estimated Cost Savings – Project Elements

Traffic Cameras	\$1,339,400	Annually, Reduced Delay
Variable Message Signs	\$974,835	Annually, Reduced Delay
Signal Systems	\$7,193,040	Annually, Reduced Delay
Total	\$9,507,275.00	

### **Development of Estimated Construction Costs**

The development of costs for design, construction, operations and maintenance are developed from various resources, including research publications.

#### *Design Costs*

The design costs are from the negotiated price with the selected consultant. The design for the system is \$105,000 and designs will be included with the roadway designs for the project.

*Construction/O&M Cost Estimates*

The preliminary estimates for construction and O&M costs for the key components of the Summerlin Road ITS system are illustrated in the table below.

Component	Estimated Quantity	Est. Construction Cost	Est. First Year O&M Cost	Est. Total
Traffic Camera	3	\$4,000	\$500	\$13,500
Variable Message Sign	2	\$13,000	\$700	\$27,400
Signal System	1	\$68,000	\$1,200	\$69,200
Comm. & Field HW	1	\$235,000	\$1,500	\$236,500
Video Detection	4	\$16,000	\$1,000	\$68,000
Network Devices	3	\$30,000	\$1,500	\$94,500
			Grand Total	\$509,100.00

*Summary*

The values developed for the estimated cost for design, construction and O&M are summarized in the following table. These costs are estimated to be \$614,000.

*Summary of Estimated Costs – Project Elements*

Design	\$105,000
Construction/O&M	\$509,000
Total	\$614,000.00

**Cost vs. Delay Cost Savings  
Estimates for Summerlin  
ITS  
Summary for Major Field  
Components**

Selected ITS Component	Est. Construction & 1st yr. O&M Costs	Estimated Savings	Comment
Signal System	\$69,200	\$7,193,040	Motorist Savings* - Reduction in Average Cost of One Peak Hour Delay
Variable Message Sign	\$27,400	\$974,835	Motorist Savings* - Avg. Reduction in Incident Related Delay Annually
Traffic Camera	\$13,500	\$1,339,400	Motorist Savings* - Avg. Reduction in Incident Related Delay
Totals	\$110,101.00	\$9,507,275.00	

\* - Based upon conservative estimate of only one hour per day.



LEE COUNTY PROFESSIONAL SERVICE/SERVICE PROVIDER AGREEMENT  
CHANGE ORDER/SUPPLEMENTAL TASK AUTHORIZATION

Change Order  
 Supplemental Task Authorization

NO.: #1

(A Change Order or Supplemental Task Authorization Requires Approval by the Department Director for Expenditures Under \$25,000 or Approval by the County Manager for Expenditures Between \$25,000 and \$50,000 or Approval by the Board of County Commissioners for Expenditures over \$50,000)

CONTRACT/PROJECT NAME: Miscellaneous Traffic Engineering Services - Summerlin ITS Design

CONSULTANT: Gray-Calhoun and Associates

PROJECT NO.: 6007

SOLICIT NO.: CN 03-04 CONTRACT NO.: 2472 ACCOUNT NO.: 20600718804 .50

REQUESTED BY: Harry Campbell, P.E., P.T.O.E.

DATE OF REQUEST: 02/14/05

Upon the completion and execution of this Change Order or Supplemental Task Authorization by both parties the Consultant/Provider is authorized to and shall proceed with the following:

EXHIBIT "CO/STA-A: SCOPE OF PROFESSIONAL SERVICE: DATED: 02/14/05

EXHIBIT "CO/STA-B: COMPENSATION & METHOD OF PAYMENT: DATED: 02/14/05

EXHIBIT "CO/STA-C: TIME AND SCHEDULE OF PERFORMANCE: DATED: 02/14/05

EXHIBIT "CO/STA-D: CONSULTANT'S/PROVIDERS ASSOCIATED  
SUB-CONSULTANT(S)/SUB-CONTRACTORS: DATED: 02/14/05

EXHIBIT "CO/STA-E: PROJECT GUIDELINES AND CRITERIA: DATED: 02/14/05

It is understood and agreed that the acceptance of this modification by the CONSULTANT/PROVIDER constitutes an accord and satisfaction.

RECOMMENDED:  
By: [Signature] 2/14/05  
Department Director Date

ACCEPTED:  
By: [Signature]  
Consultant/Provider  
(Print Name) JAY HL CALHOUN

COUNTY APPROVAL:  
By: \_\_\_\_\_  
Department Director  
(Print Name) \_\_\_\_\_  
(Under \$25,000)

By: [Signature] 3/14/05  
Contracts Mgmt Date

Date Accepted: 3/7/05

Date Approved: \_\_\_\_\_

Corporate Seal

APPROVED:

By: \_\_\_\_\_  
\*County Attorney's Office Date

By: \_\_\_\_\_  
County Manager (Between  
(\$25,000 and under \$50,000)  
Date Approved: \_\_\_\_\_

\*County Attorney signature needed  
for over Board level expenditures only.

By: \_\_\_\_\_  
Chairman  
Board of County Commissioners  
Date Approved: \_\_\_\_\_

CHANGE ORDER AGREEMENT No. \_\_\_\_\_

or

SUPPLEMENTAL TASK AUTHORIZATION No.   #1  

EXHIBIT "CO/STA-A"

Date:   02/14/05  

SCOPE OF PROFESSIONAL SERVICES

Miscellaneous Traffic Engineering Services – Summerlin ITS Design

(Enter Project Name from Page 1 of the  
Change Order or Supplemental Task Authorization)

SECTION 1.00 CHANGE(S) TO PROFESSIONAL SERVICES

The "Scope of Professional Services" as set forth in Exhibit "A" of the Professional Services Agreement, or Service Provider Agreement, referred to hereinbefore is hereby supplemented, changed or authorized, so that the CONSULTANT or SERVICE PROVIDER, shall provide and perform the following professional services, tasks, or work as a supplement to, change to, or authorized to, the scope of services previously agreed to and authorized:

STA #1 supplements the Miscellaneous Traffic Engineering Services Contract (CN 03-04) to authorize the consultant firm Gray-Calhoun and Associates to provide professional services for the designs for installation of an Intelligent Transportation System (ITS) along CR 869/Summerlin Road from north of Cypress Lake Drive to south of Boy Scout Drive. The specific services to be provided by the Consultant under this contract supplement are contained in attachment "A" of this document and are detailed in Tasks 1 through 9. The anticipated contract duration is 12 months.

\*Attach additional pages, if needed.

Page   A 1   of   A 1  

CMO:025  
09/25/01

CHANGE ORDER AGREEMENT No.

or

SUPPLEMENTAL TASK AUTHORIZATION No. #1

EXHIBIT "CO/STA-B"

Date: 02/24/05

COMPENSATION AND METHOD OF PAYMENT

For Miscellaneous Traffic Engineering Services – Summerlin ITS Design

(Enter Project Name from Page 1 of the  
Change Order or Supplemental Task Authorization)

SECTION 1.00 CHANGE(S) IN COMPENSATION

The compensation the CONSULTANT, or SERVICE PROVIDER, shall be entitled to receive for providing and performing the supplemented, changed or authorized services, tasks, or work as set forth and enumerated in the Scope of Services set forth in this CHANGE ORDER OR SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT, Exhibit "CO/STA-A", attached hereto shall be as follows:

NOTE: A Lump Sum (L.S.) or Not-to-Exceed (N.T.E.) amount of compensation to be paid the CONSULTANT should be established and set forth below for each task or sub-task described and authorized in Exhibit "S/COA-A". In accordance with Professional Services Agreement Article 5.03(2) "Method of Payment", tasks to be paid on a Work-in-Progress payment basis should be identified (WIPP).

Task Number	Task Title	Amount of Compensation	Indicate Basis of Compensation LS or NTE	If Applicable Indicate (W.I.P.P.)
1.0	Project Management	\$14,089.94	NTE	W.I.P.P.
2.0	Concept of Operations Plan	\$11,811.20	NTE	W.I.P.P.
3.0	Communication System Design	\$10,508.53	NTE	W.I.P.P.
4.0	Video Camera System Design	\$6,204.99	NTE	W.I.P.P.
5.0	Video Detection System Design	\$1,318.94	NTE	W.I.P.P.
6.0	Dynamic Message System Design	\$6,204.99	NTE	W.I.P.P.
7.0	Device Structure Design	\$5,282.06	NTE	W.I.P.P.
7A	Geotechnical Investigations	\$1,293.57	NTE	W.I.P.P.
7B	Structure Design	\$16,160.00	NTE	W.I.P.P.
8.0	Preparation of Plans Package	\$21,012.42	NTE	W.I.P.P.
9.0	Preparation of Technical Specifications	\$8,520.00	NTE	W.I.P.P.
10.0	Lump Sum Expenses	\$2,912.54	L.S.	W.I.P.P.
TOTAL		\$105,319.18		

(Unless list is continued on next page)

CHANGE ORDER AGREEMENT No. \_\_\_\_\_  
or  
 SUPPLEMENTAL TASK AUTHORIZATION No. #1

**SECTION 2.00 SUMMARY OF CHANGE(S) IN COMPENSATION**

Pursuant to and in consideration of the change(s) in the Scope of Professional Services set forth in the CHANGE ORDER or AGREEMENT, Exhibit "CO/STA-A", the compensation the COUNTY has previously agreed to pay to the CONSULTANT, or SERVICE PROVIDER, as set forth in Exhibit "B" of the Professional Services Agreement, or Service Provider Agreement, shall be changed to be as follows:

Section/Task Number	Section/Task Name	Compensation In the Basic Agreement	Adjustment(s) by Previous CO or STA Nos. _____	Adjustment(s) Due to this CO or STA	Summary of Changed Compensation
TOTAL		None	None	None	None

CHANGE ORDER AGREEMENT No. \_\_\_\_\_  
 or  
 SUPPLEMENTAL TASK AUTHORIZATION No. #1

EXHIBIT "CO/STA-C"

Date: 02/14/05

TIME AND SCHEDULE OF PERFORMANCE

for Miscellaneous Traffic Engineering Services – Summerlin ITS

(Enter Project Name from Page 1 of the  
Change Order or Supplemental Task Authorization Agreement)

SECTION 1.00

CHANGES FOR THIS CHANGE ORDER OR SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT

The time and schedule of completion for the various phases or tasks required to provide and perform the services, tasks, or work set forth in this CHANGE ORDER or SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT, Exhibit "CO/STA-A", entitled "Scope of Professional Services" attached hereto is as follows:

Phase and/or Task Reference as Enumerated in EXHIBIT AA@	Name or Title of Phase and/or Task	Number of Calendar Days For Completion of Each Phase and/or Task	Cumulative Number of Calendar Days For Completion from Date of Notice to Proceed For this CO or STA
Task 1.0	Project Management	360	360
Task 2.0	Concept of Operations Plan	30	180
Task 3.0	Communications System Design	30	180
Task 4.0	Video Camera System Design	30	60
Task 5.0	Video Detection System Design	30	60
Task 6.0	Dynamic Message System Design	30	60
Task 7.0	Device Structure Design (7A & 7B)	90	180
Task 8.0	Preparation of Plans Package	30	180
Task 9.0	Preparation of Technical Specifications	60	280

CHANGE ORDER AGREEMENT No. \_\_\_\_\_

SUPPLEMENTAL TASK AUTHORIZATION No. #1

EXHIBIT "CO/STA-C"

Date: 02/14/05

TIME AND SCHEDULE OF PERFORMANCE

for Miscellaneous Traffic Engineering Services – Summerlin ITS

(Enter Project Name from Page 1 of the  
Change Order or Supplemental Task Authorization Agreement)

**SECTION 2.00 SUMMARY OF THE IMPACT OF CHANGE(S) IN PROFESSIONAL SERVICES ON  
THE OVERALL PROJECT TIME AND SCHEDULE OF PERFORMANCE**

Pursuant to and in consideration of the changes in the Scope of Professional Services in this CHANGE ORDER or SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT, Exhibit "CO/STA-A", the time and schedule the COUNTY and the CONSULTANT, or SERVICE PROVIDER, has previously agreed to for all of the work to be done under this Professional Services Agreement, or Service Provider Agreement, shall be changed to be as follows:

Phase and/or Task Reference as Enumerated in EXHIBIT >A= and EXHIBIT >CO/STA-A=	Name or Title of Phase and/or Task	Number of Calendar Days For Completion of Each Phase and/or Task	Cumulative Number of Calendar Days For Completion From Date of Notice to Proceed
N/A	N/A	N/A	N/A

CHANGE ORDER AGREEMENT No. \_\_\_\_\_  
or  
 SUPPLEMENTAL TASK AUTHORIZATION No. 1

EXHIBIT "CO/STA-D"

Date: 02/14/05

CONSULTANT'S, OR SERVICE PROVIDER'S, ASSOCIATED SUB-CONSULTANT(S) AND  
SUBCONTRACTOR(S)

for Miscellaneous Traffic Engineering Services – Summerlin ITS

CONSULTANT, or SERVICE PROVIDER, intends to engage the following sub-consultant(s) and/or sub-contractor(s) to assist the CONSULTANT, or SERVICE PROVIDER, in providing and performing the services, tasks, or work required under this CHANGE ORDER, or SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT.

(If none, enter the word "none" in the space below.)

Service and/or Work to be Provided or Performed	Name and Address of Individual or Firm	Disadvantaged, Minority or Women Business Enterprise, (If Yes, Indicate Type)			Sub-Consultant Services are Exempted from Prime Consultant=s Insurance Coverage	
		Yes	No	Type	Yes	No
Structural Services	Pitman Hartenstein and Associates 12701 World Plaza Lane, Bldg 80 Ft. Myers, FL 33907		X		X	
Geotechnical Services	Ardaman & Associates, Inc. 59970 Bavaria Road Fort Myers, Florida 33913		X		X	

CHANGE ORDER AGREEMENT No. \_\_\_\_\_

or

SUPPLEMENTAL TASK AUTHORIZATION No. #1

EXHIBIT "CO/STA-E"

Date: 02/14/05

PROJECT GUIDELINES AND CRITERIA

for Miscellaneous Traffic Engineering Services – Summerlin ITS Design

(Enter Project Name from Page 1 of the  
Change Order or Supplemental Task Authorization Agreement)

As a supplement, or change, to the Project Guidelines and Criteria set forth in the Professional Services Agreement, or Service Provider Agreement, Exhibit "E", the COUNTY has established the following Guidelines, Criteria, Goals, Objectives, Constraints, Schedule, Budget, and/or Requirements which shall serve as a guide to the CONSULTANT, or SERVICE PROVIDER, in performing the professional services, tasks, or work to be provided pursuant to the professional services set forth hereinbefore in CHANGE ORDER or SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT, Exhibit "CO/STA-A", attached hereto:

(If none, enter the word "None" in the space below.)

ITEM No. 1

None



**Lee County Miscellaneous Traffic Engineering Services  
(CO/STA 1 – Attachment Exhibit A)**

**SUMMERLIN ROAD INTELLIGENT TRANSPORTATION SYSTEM**

**INTRODUCTION**

This project includes the design for installation of an Intelligent Transportation System (ITS) along CR 869/Summerlin Road from north of Cypress Lake Drive to south of Boy Scout Drive. The ITS design and installation is to compliment and be coordinated with the Summerlin Road construction project currently under design by Lee County DOT. The specific services to be provided by the Consultant under this contract are presented in this document as Task 1 through Task 9. The anticipated contract duration is 12 months.

**TASK 1 – PROJECT MANAGEMENT**

This task includes any management activities by the Consultant that will result in the successful completion of the design services as defined in this contract. The task also involves the monitoring and coordination of work required by the County or others to assure the timely and efficient completion of this contract. Included are: interagency and utility coordination; status reports; meetings; and project records and files.

**Subtask 1A – Interagency and Utility Coordination**

The Consultant shall coordinate with the Roadway Consultant on all issues required to effectively coordinate the two design plan sets. The Consultant shall assist the County in obtaining design approvals, additional permits, agreements, etc., from any agencies involved in or affected by the implementation of the project plans prepared by the Consultant. This effort should be limited because the Roadway Consultant will have already completed this work for the roadway section. This could include meetings and correspondence between the Consultant and individual agencies; the preparation of support data and agreements for processing by the County and other appropriate agencies; and coordination of input, reviews and other project-related information from the County and other agencies.

**Subtask 1B – Status Reports**

Each month during the contract, the Consultant shall prepare and submit a concise monthly status report that addresses the technical activities performed during the previous month and those anticipated to be performed during the current month. The monthly status report shall include, in graphical format, a time line for the services specified in this contract. Each contract task and the amount of time scheduled by the Consultant shall be identified and be consistent with the terms and conditions of the contract. Completion dates for the critical project tasks shall be specified. The Consultant shall also include the critical design milestones for the roadway design on the schedule to ensure coordination between the two schedules. The Consultant shall depict contract progress on the time line. Additionally, a summary of each contract task, the estimated percentage of total contract services each represents, the percent completion of each,

and the total percent completion of the contract services shall be presented in tabular format on a monthly basis.

### **Subtask 1C – Meetings**

The Consultant will be responsible for conducting monthly meetings to address technical, management and coordination issues. The Consultant shall prepare a meeting notice and agenda, take minutes at each meeting and distribute copies to all attendees and appropriate others. A task list for “action items” will be developed with the responsible party determined. The Consultant shall attend the roadway design progress meetings.

### **Subtask 1D – Project Records and Files**

The Consultant shall maintain a comprehensive documentation file for the project.

### **County Responsibility**

The County will review and provide comments on the monthly status reports within one week of submittal, and provide guidance as necessary in the resolution of reported problems or schedule variations.

### **Task Deliverables**

- Meeting Minutes
- Invoices
- Monthly Status Reports

## **TASK 2 – CONCEPT OF OPERATIONS PLAN**

The Consultant shall develop a Concept of Operations Plan that shall define the system architecture and include market packages. The Concept of Operations Plan shall be a high-level plan and will include a summary of the systems, the operational facility needs, integration and testing, coordination, performing and procuring operations and maintenance, training and documentation, and operation procurement and contracting. The Concept of Operations Plan shall also include the project’s integration in the established regional architecture, including jurisdictional coordination. An analysis of the expected maintenance and operations costs will be completed. Costs and benefits will be presented and summarized pertaining to both conceptual and financial impacts.

The Consultant shall develop the draft Concept of Operations Plans and submit two copies to the County. The Consultant shall submit two copies of the final version in hard print and one copy in electronic form prior to the final submittal of the Plans.

## **County Responsibility**

The County will review and comment upon, as appropriate, the Consultant's submittal of a draft Concept of Operations Plan. The County will review and approve, as appropriate, the Consultant's submittal of the final Concept of Operations Plan.

## **Task Deliverables**

- Draft Concept of Operations Plan
- Final Concept of Operations Plan

## **TASK 3 – COMMUNICATIONS SYSTEM DESIGN**

The Consultant shall develop the design for the communications system necessary to fully integrate the ITS devices, including the video cameras, DMSs, video detection and intersection controllers into the system using County-maintained fiber-optic communications cable and, potentially wireless communication devices.

The Consultant shall prepare a fiber allocation table designating buffer tubes to other agencies. The County will determine the agencies to be included. The Consultant shall prepare a fiber optic cable splicing schematic that identifies cables by name, size of cable, names of fibers for system operation, names of fibers for video operation, names of fibers for DMS operation, and names of spare fibers designated by color of buffer tube and color of fiber for each fiber entering an enclosure. The Consultant shall perform a bandwidth analysis, to include the requirements for the ITS components and available spare capacity. All fibers entering an enclosure shall be capped, expressed through the enclosure or spliced. The cable schematic shall be prepared on half-sized plan sheets and included in the plans package. The Consultant shall perform optical loss budget calculations on selected cable runs to assure that attenuation does not reduce the optical power to unacceptable levels. The Consultant shall document any control center communication design requirements to fully integrate the ITS devices into the central SunGuide system.

## **County Responsibility**

The County will review and approve, as appropriate, the Consultant's submittal of the communication system and the design requirements for the control center.

## **Task Deliverables**

- Communication System Design Requirements Technical Memorandum
- Communication System Splice Schematic

## **TASK 4 – VIDEO CAMERA SYSTEM DESIGN**

The Consultant shall develop the design for the installation and integration of five video cameras into the central SunGuide system. This task shall include the locations of cameras, mounting

hardware and all communications hardware. Video location work shall be prepared and included into the plans package.

The Consultant shall finalize the location of each camera with assistance of the County who will provide a bucket truck for the location review. A camcorder will be used to verify the image that will be provided by the cameras. A copy of the camcorder video and the proposed mounting heights for each camera location shall be submitted to the County for review and approval.

### **County Responsibilities**

The County will review and approve the Consultant's submittal of the video camera system design.

### **Task Deliverables**

- Video Camera System Requirements Technical Memorandum
- Camera location Review CD

## **TASK 5 – VIDEO DETECTION SYSTEM DESIGN**

The Consultant shall review the designs for the installation of the SOLO video detection systems. The Consultant shall analyze and recommend an approach to transmit the video from the local intersection cabinet to the traffic control center. The Consultant shall develop and implement a plan to integrate the video from detection units into the central SunGuide system. This design shall include any communications hardware needed to complete the installation.

### **County Responsibilities**

The County will review and approve the Consultant's submittal of the video detection communications system design.

### **Task Deliverables**

- Video Detection Communications System Requirements Technical Memorandum

## **TASK 6 – DYNAMIC MESSAGE SIGN DESIGN**

The Consultant shall develop the design for the installation and integration of two Dynamic Message Signs (DMSs) into the central SunGuide system. This task shall include the location of the DMSs, design of the DMSs, mounting hardware and all communication hardware. DMS location work shall be prepared and included into the plans.

### **County Responsibility**

The County will review and approve the Consultant's submittal of the DMS installations.

## **Task Deliverables**

- DMS Installation Requirements Technical Memorandum

## **TASK 7 – DEVICE STRUCTURE DESIGN**

This task involves the development of design requirements for each of the device structures included in this contract. Included in this task are: engineering analysis; geotechnical; field investigation-structures; laboratory testing; structures report; and final analysis and report. The Consultant shall utilize available engineering resources, testing and other appropriate information available from other designs.

**Engineering Analysis** – The Consultant shall design the structures with anchor/connection bolts and foundations that are sufficient to support the given structures at distances and clearances shown in the plans. The design shall be in accordance with the latest edition of the AASHTO publication “Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals”, as modified by Chapter 29 of the latest edition of the Florida Department of Transportation (FDOT) Plans Preparation Manual. The structure plan sheets shall be signed and sealed by a professional structural engineer registered in the State of Florida, certifying that the design is sufficient for the proposed installation.

### **Subtask 7A – Geotechnical Investigation**

**Geotechnical** – The Consultant shall be responsible for a complete geotechnical investigation as needed at proposed DMS and video camera locations that are not co-located with other structures. All services performed by the Consultant shall be in accordance with Lee County standards, the FDOT Plans Preparation Manual, the Soils and Foundations Manual, related directives, Federal Highway Administration (FHWA) Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications, FHWA Work Zone Traffic Control Practices Manual and Pavement Coring and Evaluation Procedure. The County will make all determinations regarding the County 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 County to review the project scope and County requirements. The investigation plan shall include, but not be limited to, the proposed boring locations and depths and any existing geotechnical information from available sources to generally describe the surface and subsurface conditions of the project site.

The Consultant shall notify the County in adequate time to schedule a representative to attend any related conferences.

**Field Investigation-Structures** – In locations where geotechnical investigation for structural foundations is needed, it shall include, but not be limited to:

- One 30-foot Standard Penetration Test (SPT) boring at each DMS structure location.  
One 15-foot SPT boring at each video camera location.

- Borings shall be sampled continuously in the top 10 feet and on five-foot centers thereafter.
- Additional specialized field-testing as required by needs of project.

It shall be assumed to be extremely aggressive, eliminating the testing of soils for corrosion testing.

**Laboratory Testing** – All laboratory testing will be performed in accordance with Florida Sampling and Testing Methods or ASTM or by related directives.

Laboratory testing for structural foundations will include the following, as required by the needs of the project:

- Organic Content
- Moisture Content
- Sieve Analysis
- Atterberg Limits

### **Subtask 7B – Structure Design**

**Structures Report** – The analysis shall include documentation for each of the DMS locations and a typical for the video camera locations. The structures report shall contain the following discussions as appropriate for the assigned project:

- Summary of structure background data
- Analysis of structure foundation, including but not limited to, the following:
  1. Sample calculations (or computer print-out)
  2. Shaft diameter and length
  3. Deflection
  4. Structure height
  5. Imposed loads (lateral and axial loads)
- Draft of Report of Core Boring Sheet, including design parameters such as total unit weight, angle of internal friction, cohesion and specialized construction requirements, for inclusion in final construction plans
- Summary of soil test results
- Any special provisions required for construction that are not addressed in the County's standard specification

**Final Analysis and Report** – The final reports will incorporate comments from the County and will contain any additional field or laboratory test results, recommended foundation alternatives along with design parameters and special provisions for the construction plans. These reports will be submitted to the County for review prior to project completion. After review by the County, the reports will be submitted in final form and will include the following:

- All original plan sheets
- One set of reproducible sheets
- Record prints
- Any special provisions
- All reference and support documentation used in preparation of contract plans package

### **County Responsibility**

The County will review and approve, as appropriate, the Consultant's submittal of the Structures Report. The County, through plans and Technical Specification reviews, will review and approve, as appropriate, the Consultant's submittal of the design requirements for the project locations.

### **Task Deliverables**

- Two copies of the Structures Report
- Two copies of the Final Analysis and Report

## **TASK 8 – PREPARATION OF PLANS PACKAGE**

The Consultant shall prepare a complete Plans Package suitable for contract letting by the County for the installation and implementation of the Summerlin Road ITS as defined by this contract. The communications plans will include fiber optic cabling or other communication technology, conduit installation, location of pull and junction boxes, etc. The Consultant shall determine how new conduit will be tied into the conduit being installed under the roadway project. The communications system plans shall be prepared at a scale of one inch equals 40 feet. Video location work shall be at a scale of one inch equals 40 feet. An individual plan sheet is required for each video location. DMS location work shall be prepared at a scale of one inch equals 40 feet. An individual plan sheet is required for each DMS location. The complete base plans will be provided by the roadway designer.

### **County Responsibility**

The County will provide assistance to the Consultant in determining the specific format and content of the plans. The County will provide expeditious review and comments during the staged completion of the plans.

### **Task Deliverables**

- Two copies of the 60 Percent Plans
- Two copies of the 90 Percent Plans
- Three copies of the Final Plans
- One computer disk with Final Plans

## **TASK 9 – PREPARATION OF TECHNICAL SPECIFICATIONS**

The Consultant shall develop minimum Technical Specifications for all devices that will be required for the installation of this project. The Consultant shall include all relative information from the Lee County Specifications.

The Technical Specifications shall be arranged in a format that is in agreement with current County requirements. An example of the County's current formatting requirements will be provided for the Consultant's guidance.

### **County Responsibility**

The County will provide the Consultant an example of the required format of the Technical Specifications. The County will provide expeditious review and comment during staged development of the Technical Specifications.

### **Task Deliverables**

- Two copies of the first draft of the Technical Specifications with submittal of the 60 Percent Plans
- Two copies of the final Technical Specifications with submittal of the Final Plans
- One computer disk with Final Technical Specifications