



**BOARD OF SUPERVISORS AGENDA ITEM REPORT**  
**CONTRACTS / AWARDS / GRANTS**

☐ Award ☒ Contract ☐ Grant

Requested Board Meeting Date: 12/19/2017

\* = Mandatory, information must be provided

or Procurement Director Award ☐

**\*Contractor/Vendor Name/Grantor (DBA):**

Kittleson & Associates, Inc.

**\*Project Title/Description:**

Engineering Design Services For Aerospace Parkway Widening (4AERO2)

**\*Purpose:**

Amendment: Contract No. CT-PW-17-337, Amendment No. Two (2). This amendment increases the contract amount by \$79,475.16.

This amendment is for additional services at the intersection of Aerospace Parkway and Raytheon Parkway to properly include engineering in Phase 2 GMP #2 package as well as the re-alignment of Raytheon Parkway to properly connect to the new Raytheon Entry.

Administering Department: Public Works Administration.

**\*Procurement Method:**

Pursuant to Solicitation for Qualifications No. 247691, on 05/02/17, the Board of Supervisors awarded a contract for this project in the amount of \$764,235.00 for a contract term of 05/02/17 to 06/30/19. Previous Amendment No. One (1) was approved by the Procurement Director to amend the scope of work and reallocate funds between Task 11-Additional Design Services and Ninyo & Moore.

Attachment: Amendment No. Two (2)

**\*Program Goals/Predicted Outcomes:**

This contract is for the Consultant to provide engineering design services for the Aerospace Parkway Widening Project to four travel lanes, including reconstructing the Nogales Highway Intersection to add capacity and improve operations and safety, and widen the existing UPRR crossing. This amendment will include scope for the correct alignment to the new Raytheon Entry necessary to properly operate, allow for this phase to properly include additional scope for the intersection, extend the Joint Utility Trench to Nogales Highway at the UPRR crossing, and make adjustments to the regional detention basin as outlined in Amendment 2 scope.

**\*Public Benefit:**

The construction of this expansion will provide the infrastructure needed for both the commercial and industrial growth being promoted in the area of the Aerospace corridor, including known increased traffic needs at Raytheon and Vector Space. The result of this development will be to support growth in the local economy which will benefit the entire region.

**\*Metrics Available to Measure Performance:**

The performance will be measured using the consultant evaluation process as outlined in BOS D29.1(E)(II).

**\*Retroactive:**

No.

To: COB- 12-6-17  
yjs. 27 (1)

**Contract / Award Information**

Document Type: \_\_\_\_\_ Department Code: \_\_\_\_\_ Contract Number (i.e., 15-123): \_\_\_\_\_  
Effective Date: \_\_\_\_\_ Termination Date: \_\_\_\_\_ Prior Contract Number (Synergen/CMS): \_\_\_\_\_  
☐ Expense Amount: \$\* \_\_\_\_\_ ☐ Revenue Amount: \$ \_\_\_\_\_

**\*Funding Source(s) required:**

Funding from General Fund? ☐ Yes ☐ No If Yes \$ \_\_\_\_\_ % \_\_\_\_\_

Contract is fully or partially funded with Federal Funds? ☐ Yes ☐ No

**\*Is the Contract to a vendor or subrecipient?**

Were insurance or indemnity clauses modified? ☐ Yes ☐ No

If Yes, attach Risk's approval

Vendor is using a Social Security Number? ☐ Yes ☐ No

If Yes, attach the required form per Administrative Procedure 22-73.

**Amendment / Revised Award Information**

Document Type: CT Department Code: PW Contract Number (i.e., 15-123): 17-337

Amendment No.: Two (2) AMS Version No.: Six (6)

Effective Date: 12/19/17 New Termination Date: \_\_\_\_\_

Prior Contract No. (Synergen/CMS): \_\_\_\_\_

☒ Expense or ☐ Revenue ☒ Increase ☐ Decrease Amount This Amendment: \$ 79,475.16

Is there revenue included? ☐ Yes ☒ No If Yes \$ \_\_\_\_\_

**\*Funding Source(s) required:** HURF 12.6%, RWRD Obligations

Funding from General Fund? ☐ Yes ☒ No If Yes \$ \_\_\_\_\_ % \_\_\_\_\_

**Grant/Amendment Information** (for grants acceptance and awards) ☐ Award ☐ Amendment

Document Type: \_\_\_\_\_ Department Code: \_\_\_\_\_ Grant Number (i.e., 15-123): \_\_\_\_\_

Effective Date: \_\_\_\_\_ Termination Date: \_\_\_\_\_ Amendment Number: \_\_\_\_\_

☐ Match Amount: \$ \_\_\_\_\_ ☐ Revenue Amount: \$ \_\_\_\_\_

**\*All Funding Source(s) required:**

\*Match funding from General Fund? ☐ Yes ☐ No If Yes \$ \_\_\_\_\_ % \_\_\_\_\_

\*Match funding from other sources? ☐ Yes ☐ No If Yes \$ \_\_\_\_\_ % \_\_\_\_\_

\*Funding Source: \_\_\_\_\_

**\*If Federal funds are received, is funding coming directly from the Federal government or passed through other organization(s)?**

Contact: Matt Sage, Procurement Officer

Department: Procurement Telephone: 724-8586

Department Director Signature/Date: \_\_\_\_\_ 12/4/17

Deputy County Administrator Signature/Date: \_\_\_\_\_ 12/5/17

County Administrator Signature/Date: \_\_\_\_\_ 12/5/17  
(Required for Board Agenda/Addendum Items)

<b>PIMA COUNTY PUBLIC WORKS ADMINISTRATION</b>		<table border="1"> <tr> <td align="center" colspan="2"><b>CONTRACT</b></td> </tr> <tr> <td><b>NO.</b></td> <td><u>CT-PW-17-337</u></td> </tr> <tr> <td><b>AMENDMENT NO.</b></td> <td><u>02</u></td> </tr> <tr> <td colspan="2">This number must appear on all invoices, correspondence and documents pertaining to this contract.</td> </tr> <tr> <td colspan="2"> </td> </tr> <tr> <td colspan="2"> </td> </tr> </table>	<b>CONTRACT</b>		<b>NO.</b>	<u>CT-PW-17-337</u>	<b>AMENDMENT NO.</b>	<u>02</u>	This number must appear on all invoices, correspondence and documents pertaining to this contract.					
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<b>AMENDMENT NO.</b>	<u>02</u>													
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<b>PROJECT:</b>	Engineering Design Services For Aerospace Parkway Widening (4AERO2)													
<b>CONSULTANT:</b>	Kittelson & Associates, Inc. 2 East Congress Street, Suite 705 Tucson, Arizona 85701													
<b>CONTRACT NO.:</b>	CT-PW-17-337													
<b>AMENDMENT NO.:</b>	Two (2)													
<b>FUNDING:</b>	HURF 12.6%, RWRD Obligations													

<b>CONTRACT TERM:</b> 05/02/17 to 06/30/2019	<b>ORIGINAL CONTRACT AMOUNT:</b>	\$	764,235.00
<b>TERMINATION PRIOR AMENDMENT:</b> 06/30/19	<b>PRIOR AMENDMENT(S):</b>	\$	-
<b>TERMINATION THIS AMENDMENT:</b> 06/30/2019	<b>AMOUNT THIS AMENDMENT:</b>	\$	79,475.16
	<b>REVISED CONTRACT AMOUNT:</b>	\$	843,710.16

### **CONTRACT AMENDMENT**

**WHEREAS**, COUNTY and CONSULTANT have entered into the Contract referenced above; and

**WHEREAS**, COUNTY has determined the need for additional services at the intersection of Aerospace Parkway and Raytheon Parkway to properly include engineering in Phase 2 GMP #2 package as well as the re-alignment of Raytheon Parkway to properly connect to the new Raytheon Entry; and

**WHEREAS**, COUNTY and CONSULTANT agree to extend the Contract Scope pursuant to Article 2 – Scope and Services to include the additional services; and

**WHEREAS**, COUNTY and CONSULTANT agree to add additional funds pursuant to Article 4 – Compensation and Payment for the additional services; and

**WHEREAS**, COUNTY and CONSULTANT agree to reallocate funds pursuant to Article 6 – Reallocation of Funds for the additional services; and

**WHEREAS**, COUNTY and CONSULTANT have agreed to modify the Contract to reflect those changes.

**NOW, THEREFORE**, it is agreed as follows:

**CHANGE:** **ARTICLE 2 – SCOPE OF SERVICES**, as previously amended in Amendment No. One (1) as follows:

From: "CONSULTANT agrees to provide Engineering Services for the COUNTY as described in APPENDIX 'A' – SCOPE OF SERVICES (4 pages), APPENDIX 'A-1' (1 page), and APPENDIX 'C' – GENERAL CONDITIONS (44 pages), attachments to this Contract, and to complete such services within the term and value of this Contract as it may be modified in accordance with Article 5."

To: "CONSULTANT agrees to provide Engineering Services for the COUNTY as described in APPENDIX 'A' – SCOPE OF SERVICES (4 pages), APPENDIX 'A-1' (1 page), **APPENDIX 'A-2' (1 page)** and APPENDIX 'C' – GENERAL CONDITIONS (44 pages), attachments to this Contract, and to complete such services within the term and value of this Contract as it may be modified in accordance with Article 5."

**ADD:** **APPENDIX 'A-2', (1 page).**

**CHANGE:** The second paragraph in **Article 4 – COMPENSATION AND PAYMENT**, as previously amended in Amendment No. One (1) as follows:

From: "CONSULTANT'S total CPFF will be allocated among the major tasks contemplated by this Contract in such manner that each major deliverable will have associated with it a not-to-exceed cost, plus a fixed fee amount, incorporated herein as APPENDIX 'B' – COMPENSATION SCHEDULE (48 pages) and APPENDIX 'B-1' (5 pages)..."

To: "CONSULTANT'S total CPFF will be allocated among the major tasks contemplated by this Contract in such manner that each major deliverable will have associated with it a not-to-exceed cost, plus a fixed fee amount, incorporated herein as APPENDIX 'B' – COMPENSATION SCHEDULE (48 pages), APPENDIX 'B-1' (5 pages) and **APPENDIX 'B-2' (23 pages)**..."

**CHANGE:** The fourth paragraph in **Article 4 – COMPENSATION AND PAYMENT** as follows:

From: "The total of all payments to CONSULTANT for services provided under this Contract will not exceed Seven Hundred Sixty-Four Thousand Two Hundred Thirty-Five Dollars and Zero Cents (\$764,235.00)."

To: "The total of all payments to CONSULTANT for services provided under this Contract will not exceed Eight Hundred Forty-Three Thousand Seven Hundred Ten Dollars and Sixteen Cents (\$843,710.16)."

**ADD: APPENDIX 'B-2', (23 pages).**

**REALLOCATE FUNDS** as follows:

Reduce: Task 11 – Additional Design Services by \$14,928.84

Increase: Task 2 – Concept Phase by \$14,928.84.

**INCREASE FUNDS** as follows:

Increase: Task 2 – Concept Phase by \$1,905.16.

Increase: Task 3 –Preliminary Design by \$20,276.00

Increase: Task 4 – Final Design by \$18,895.00

Increase: Task 5 – Construction Documents by \$4,261.00

Increase: Task 9 – UPRR Coordination by \$7,236.00

Increase: CMG – Drainage Analysis/Report by \$10,266.00

Increase: Wheat Design Group – NPPP, Erosion Control by \$3,271.00

Increase: Darling – Survey, ROW Drawings, Legal Descriptions by \$2,000.00

Increase: Ninyo & Moore – Geotechnical Investigation/Memo by \$600.00

Increase: PCRWRD Sewer Modification by \$10,765.00

This Amendment shall be effective on December 19, 2017.

All other provisions of the Contract, not specifically changed by this Amendment, shall remain in effect and be binding upon the Parties.

IN WITNESS WHEREOF, the Parties have affixed their signatures to this Amendment on the dates written below.

PIMA COUNTY:

\_\_\_\_\_  
Chair, Board of Supervisors

\_\_\_\_\_  
Date

ATTEST:

\_\_\_\_\_  
Clerk of the Board

APPROVED AS TO FORM:

\_\_\_\_\_  
Deputy County Attorney

**TOBIN ROSEN**

\_\_\_\_\_  
Name (Please Print)

12/4/17  
\_\_\_\_\_  
Date

CONSULTANT:

\_\_\_\_\_  
Signature

James Schoen, Senior Principal  
\_\_\_\_\_  
Name and Title (Please Print)

12/4/2017  
\_\_\_\_\_  
Date

## APPENDIX 'A-2', (1 page)

### Design Engineering Services – Aerospace Parkway Widening

#### Scope Addition / Reallocation:

The Following additions to the existing scope of work are as follows:

**Raytheon Parkway Design** – Phase 2 design scope will include the Intersection Design at Aerospace Parkway and Raytheon Parkway as part of the design scope as these must be included in the Phase 2 GMP #2 packages to correctly phase with construction. This packages aspects of design relating to final plan and profile, final striping and signing, curb/storm drainage. Final signal design, culvert extension, water line relocation remain with the Phase 1 design team. Phase 2 scope will also include owner added scope to incorporate the North Raytheon re-alignment up to the new Raytheon property line as needed to properly provide access to the new Raytheon access gate. This work is to be coordinated with the Raytheon design team, and will be provided as part of GMP#2.

Consultant to provide breakdown per tasks in original contract.

**Sewer Modification** – Phase 2 design scope will include per Regional Wastewater Reclamation Department request a modification to the existing sewer along Aerospace Parkway to install a new extension and manhole south of the roadway widening to accommodate future connections to the existing sewer without impacts to the new roadway pavement prism. This shall include design and coordination with ADEQ for required permits. This activity will be tracked separately for payment by RWRD funding source.

**Detention Basin Memo** – Phase 2 design scope will add scope to the current drainage memorandum to include phased implementation of the detention improvements to accommodate the existing/planned roadway drainage as well as plan for future increased usage in a regional basin. This shall be designed to maintain the existing drainage downstream structures as already sized.

**Landscape Design** – Phase 2 additional scope to include native plant inventory for the additional land impacted by the detention basin. Additional testing for soil sample to determine soil amendments has also been added to scope.

**Joint Utility Trench Design** – Phase 2 additional scope to extend the JUT through to Nogales Highway to properly provide utility connectivity in the corridor. Currently the corridor ends at the Hoover Road alignment and the extension was not in the base scope of work. This scope includes a crossing under Union Pacific Rail Road.

**Union Pacific Rail Road Coordination** – Phase 2 additional scope includes the required permits for the joint utility trench extensions. The designer shall prepare and coordinate permit acquisition.

The consultant shall prepare a full proposal with tasks to match the existing scope of work, including level of effort and cost.

**End Appendix A-2**

November 17, 2017

Project #: 20894

Nancy Cole  
Pima County Project Management Office  
201 N. Stone Ave  
Tucson, AZ 85701

**RE: 4AERO2 Aerospace Parkway Phase2 – Change Order Request No. 2**

Nancy:

I have prepared this change order request for additional budget to cover the following tasks added to the Phase 2 scope of work. These include, design of the Raytheon Parkway intersection improvements, preparation of a drainage memo for future detention basin modifications, additional UPRR permitting requirements, and additional native plant inventory work.

**Scope of Work****Raytheon Parkway Design**

- a. Intersection Design - At the completion of the concept phase, it was determined that final design and plan production of the intersection improvements, initially assigned to AECOM, will be prepared by Kittelson. This includes 60% and 90% design of roadway geometry, plan and profile, staking plans, storm drain, utility modifications, signing/stripping, and quantities. Final design of the ultimate traffic signal and drainage improvements, as well as water line relocation, will be prepared by the AECOM team.
- b. North Leg Extension – Design of the north leg re-alignment up to the Raytheon property line, parking area and driveway connection for the adjacent World View property will be added to the design scope-of-work. It is anticipated that these improvements will be included with GMP-2. This will include:
  - Analyze pavement drainage requirements and size a new culvert to be installed for the driveway crossing of the existing drainage channel. A draft and final drainage memo will be prepared. The final drainage memo will be included as an addendum to the Aerospace Parkway drainage report.
  - Prepare a preliminary (30%) design of the roadway and drainage improvements, incorporating the storage requirements for the left and right-turn lanes at the Aerospace Parkway intersection.
  - Prepare 60% plans, quantities and estimate for review by PCDOT and costing by the CMAR. A comment resolution meeting will be held.
  - Prepare final plans, quantities, estimate, and special provisions as part of GMP-2

- Coordination meetings (2) with the Raytheon design team.
- Based on existing survey data available from AECOM and from the World View development, we do not anticipate the need for additional survey for the roadway design. We understand that Pima County will provide survey should additional design data be required for design of the new culvert, tie in to the existing World View facilities, etc,
- We'll coordinate with TEP regarding potential relocation of the existing underground conductors on the west side of the existing roadway. The Raytheon design team will be responsible for design and permitting of a new water main running from Aerospace Parkway to the new Raytheon entrance facilities. We will coordinate with that design team as necessary.
- It is anticipated that two legal description will be required to define the new roadway and abandon a section of the existing roadway.

Sewer Modification – Modifications to the sewer will be designed to accommodate a future sewer main installation east of Eisenhower Road. These modifications will include installing a sewer line from the existing manhole on Aerospace Parkway to a new manhole to be installed within the new roadway shoulder. We will prepare preliminary and final sewer plans per PCRWRD requirements. We'll attend design and comment resolution meetings (2) with PCRWRD. We'll prepare an ADEQ permit application and coordinate with PCDEQ for permit approval. Pima County will provide flowrate data required for the new line and permit. We'll apply the ADEQ permit fee to our current direct expenses budget.

Detention Basin Memo – As discussed at the meeting to review the detention basin sizing, CMG will prepare a memo that defines the phased implementation of detention improvements to accommodate development of Parcels A and B and the Vector site in the Pima County Aerospace, Defense and Technology Business Research Park. The proposal from CMG for this work is attached.

Landscape Design –Wheat Design will conduct additional native plant inventory of the location where the detention basin will be constructed, and conduct soil sampling and testing to determine if additional amendments are required to improve the germination and success of seeding for erosion control. The proposal from Wheat Design for this work is attached.

JUT Design – The JUT will need to be extended approximately 1,000 feet from the Hoover Road alignment to Nogales Highway, including a crossing under the UPRR. Kittelson will prepare plan and profile and appropriate details for the extension.

UPRR Coordination – Additional permitting is required for the installation of underground fiber (ITS and IT) and street lighting conductors across the UPRR, as well as extension of the existing drainage culverts within the UPRR crossing easement. Kittelson will prepare and submit the permit applications, including all needed supporting exhibits and documents, and coordinate with the UPRR throughout the permitting process.



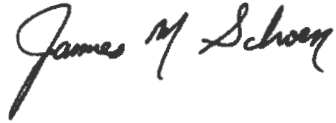
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Fee

A fee estimate for these tasks is attached.

Please let us know if you have any questions or would like to discuss our proposal.

Sincerely,

A handwritten signature in black ink that reads "James M. Schoen". The signature is written in a cursive style with a large, stylized "J" and "S".

James M. Schoen, PE  
Senior Principal  
[jschoen@kittelson.com](mailto:jschoen@kittelson.com)  
520-382-4703

Fee Estimate Summary - Changer Order No. 2  
Aerospace Parkway Widening  
Kittelson & Associates, Inc.

	Original Contract				Change Order No. 1				Change Order No. 2				Total			
	Labor	Fee	Directs	Subtotal	Labor	Fee	Directs	Subtotal	Labor	Fee	Directs	Subtotal	Labor	Fee	Directs	Subtotal
Task 1. Project Management	\$ 55,146	\$ 5,515	\$	\$ 60,660									\$ 55,146	\$ 5,515	\$	\$ 60,660
Task 2. Concept Phase (30%)	\$ 120,198	\$ 12,020	\$ 3,160	\$ 135,378					\$ 15,304	\$ 1,530	\$	\$ 16,834	\$ 135,502	\$ 13,550	\$ 3,160	\$ 152,212
Task 3. Preliminary Design (60%)	\$ 134,468	\$ 13,447	\$ 260	\$ 148,175					\$ 18,433	\$ 1,843	\$ -	\$ 20,276	\$ 152,901	\$ 15,290	\$ 260	\$ 168,451
Task 4. Final Design	\$ 102,918	\$ 10,292	\$ 260	\$ 113,470					\$ 17,177	\$ 1,718	\$ -	\$ 18,895	\$ 120,095	\$ 12,010	\$ 260	\$ 132,365
Task 5. Construction Documents	\$ 41,481	\$ 4,148	\$ 260	\$ 45,890					\$ 3,874	\$ 387	\$	\$ 4,261	\$ 45,355	\$ 4,536	\$ 260	\$ 50,151
Task 6. Environmental Clearance	\$ 3,269	\$ 327	\$ -	\$ 3,596									\$ 3,269	\$ 327	\$ -	\$ 3,596
Task 7. RW Clearance	\$ 4,067	\$ 407	\$	\$ 4,473									\$ 4,067	\$ 407	\$	\$ 4,473
Task 8. Utility Coordination	\$ 21,691	\$ 2,169	\$ 600	\$ 24,461									\$ 21,691	\$ 2,169	\$ 600	\$ 24,461
Task 9. UPRR Coordination	\$ 12,011	\$ 1,201	\$ 759	\$ 13,971					\$ 6,578	\$ 658	\$ -	\$ 7,236	\$ 18,589	\$ 1,859	\$ 759	\$ 21,207
Task 10. Public Involvement	\$ 4,953	\$ 495	\$ -	\$ 5,448									\$ 4,953	\$ 495	\$	\$ 5,448
<b>Kittelson SubTotal</b>	<b>\$ 500,203</b>	<b>\$ 50,020</b>	<b>\$ 5,299</b>	<b>\$ 555,523</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 61,366</b>	<b>\$ 6,137</b>	<b>\$ -</b>	<b>\$ 67,503</b>	<b>\$ 561,569</b>	<b>\$ 56,157</b>	<b>\$ 5,299</b>	<b>\$ 623,025</b>
Subconsultant Fees																
CMG; Drainage Analysis/Report	\$ 24,032	\$ 2,403	\$ 1,225	\$ 27,660					\$ 9,105	\$ 911	\$ 250	\$ 10,266	\$ 33,137	\$ 3,314	\$ 1,475	\$ 37,926
WDG; NPPP, Erosion Control	\$ 22,892	\$ 2,289	\$ 26	\$ 25,207					\$ 2,360	\$ 236	\$ 675	\$ 3,271	\$ 25,252	\$ 2,525	\$ 701	\$ 28,478
Darling; Survey, ROW Drawings, Legal Descriptions	\$ 45,405	\$ 4,540	\$ -	\$ 49,945					\$ 1,818	\$ 182	\$	\$ 2,000	\$ 47,223	\$ 4,722	\$	\$ 51,945
Ninyo & Moore; Geotechnical Investigation/Memo	\$ 12,682	\$ 1,268	\$ 4,810	\$ 18,760	\$ 4,273	\$ 427	\$ 1,620	\$ 6,320	\$ 545	\$ 55	\$ -	\$ 600	\$ 17,500	\$ 1,750	\$ 6,430	\$ 25,680
CIC; UPRR Coordination	\$ 20,192	\$ 2,019	\$ 1,499	\$ 23,710									\$ 20,192	\$ 2,019	\$ 1,499	\$ 23,710
<b>SubTotal</b>	<b>\$ 125,203</b>	<b>\$ 12,519</b>	<b>\$ 7,560</b>	<b>\$ 145,282</b>	<b>\$ 4,273</b>	<b>\$ 427</b>	<b>\$ 1,620</b>	<b>\$ 6,320</b>	<b>\$ 13,828</b>	<b>\$ 1,383</b>	<b>\$ 925</b>	<b>\$ 16,136</b>	<b>\$ 143,304</b>	<b>\$ 14,329</b>	<b>\$ 10,105</b>	<b>\$ 167,738</b>
Task 11. Additional Design Services	\$ 19,318	\$ 1,932	\$ -	\$ 21,249	\$ (4,273)	\$ (427)	\$ (1,620)	\$ (6,320)	\$ (13,572)	\$ (1,357)	\$ -	\$ (14,929)	\$ 1,473	\$ 147	\$ (1,620)	\$ (0)
Task 12. Construction Services	\$ 38,347	\$ 3,835	\$	\$ 42,181									\$ 38,347	\$ 3,835	\$	\$ 42,181
PCRWRD Sewer Modification									\$ 8,423	\$ 842	\$ 1,500	\$ 10,765	\$ 8,423	\$ 842	\$ 1,500	\$ 10,765
<b>Total</b>	<b>\$ 683,070</b>	<b>\$ 68,306</b>	<b>\$ 12,859</b>	<b>\$ 764,235</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 70,045</b>	<b>\$ 7,005</b>	<b>\$ 2,425</b>	<b>\$ 79,475</b>	<b>\$ 753,115</b>	<b>\$ 75,310</b>	<b>\$ 15,284</b>	<b>\$ 843,710</b>

**Fee Estimate Summary - Change Order No. 2**  
**Aerospace Parkway Widening**  
**Kittelson & Associates, Inc.**

	Kittelson			Total
	Labor	Fee	Directs	
Raytheon Parkway Intersection Design	\$ 17,302	\$ 1,730	\$ -	\$ 19,032
Raytheon Parkway North Leg Realignment/Parking Lot	\$ 30,650	\$ 3,065		\$ 33,715
Detention Basin Memo				
Landscape Design - Additional Native Plant Inventory				
JUT Extension Design	\$ 6,836	\$ 684		\$ 7,519
UPRR Coordination	\$ 6,578	\$ 658		\$ 7,236
<b>Kittelson SubTotal</b>	<b>\$ 61,365</b>	<b>\$ 6,137</b>	<b>\$ -</b>	<b>\$ 67,502</b>
<b>Subconsultant Fees</b>				
CMG; Detention Basin Memo	\$ 4,429	\$ 443	\$ 250	\$ 5,122
CMG; Drainage Memo - North Leg	\$ 4,676	\$ 468		\$ 5,144
WDG; Additional NP Inventory; Soil Testing	\$ 2,360	\$ 236	\$ 675	\$ 3,271
Darling; Survey; Legal Descriptions	\$ 1,818	\$ 182		\$ 2,000
Ninyo & Moore; Geotechnical Investigation/Memo	\$ 545	\$ 55		\$ 600
CTC; UPRR Coordination				
<b>Subconsultant SubTotal</b>				<b>\$ 16,136</b>
<b>Subtotal</b>				<b>\$ 83,638</b>
PCRWRD Sewer Modification	\$ 8,423	\$ 842	\$ 1,500	\$ 10,765
<b>Change Order No. 2 Total</b>				<b>\$ 94,403</b>

Hours and Fee Estimate: Change Order No. 2 - Raytheon Intersection, JUT, UPRR  
Aerospace Parkway Widening  
Kittelson & Associates

	Project Mgr. Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
	\$74.34	\$54.79	\$42.89	\$36.36	\$25.35	\$36.14	\$24.39	\$21.68		KAI
<b>Preliminary Design (60%)</b>										KAI
Preliminary Design Model	0	2	12	14	4	1	4	0	37	\$ 4,173
Preliminary Plans	2	6	4	4	2	3	2	0	23	\$ 3,057
Cost Estimate			2	2					4	\$ 483
QA/QC	1	2						2	5	\$ 693
<b>Total</b>	<b>3</b>	<b>10</b>	<b>18</b>	<b>20</b>	<b>6</b>	<b>4</b>	<b>6</b>	<b>2</b>	<b>69</b>	<b>\$ 8,407</b>
<b>Model and Plans Breakout - 60% Design</b>										
Cover Sheet									0	\$ -
General Notes									0	\$ -
Typical Sections		1	2	2					5	\$ 650
Horizontal Control			2	2			2		6	\$ 632
Roadway Plans	2	2	6	6	6				22	\$ 2,702
Side Street Plans									0	\$ -
Driveway Plans									0	\$ -
Cross Drainage Plans									0	\$ -
Storm Drain Channel Plans		4	4	6					14	\$ 1,857
Landscape SWPPP									0	\$ -
Pavement Marking/Signing		1	2	2		4			9	\$ 1,091
Traffic Signals									0	\$ -
Roadway Lighting									0	\$ -
JUT Trench Adjustments									0	\$ -
Fucson Water Relocation (Aerospace)									0	\$ -
Sewer Modifications (Aerospace)									0	\$ -
Cross Section Sheets							4		4	\$ 298
<b>Subtotal for Model and Plans</b>	<b>2</b>	<b>8</b>	<b>16</b>	<b>18</b>	<b>6</b>	<b>4</b>	<b>6</b>	<b>0</b>	<b>60</b>	<b>\$ 7,230</b>
Plans Hours Only	2	6	4	4	2	3	2	0	23	
% of hours for Plans	80%	70%	25%	20%	25%	70%	30%	100%	38%	
	Project Mgr. Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
<b>Final Design (90%)</b>										KAI
Final Model	0	2	8	15	0	0	8	0	33	\$ 3,639
Final Plans	1	6	12	23	0	0	23	0	65	\$ 7,060
Initial Specifications		2							2	\$ 334
Cost Estimate		1	1						2	\$ 298
QA/QC Review	1	1						2	4	\$ 526
<b>Total</b>	<b>2</b>	<b>12</b>	<b>21</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>31</b>	<b>2</b>	<b>106</b>	<b>\$ 11,857</b>
<b>Model and Plans Breakout - 90% Design</b>										
Cover Sheet									0	\$ -
General Notes									0	\$ -
Typical Sections			1						1	\$ 131
Horizontal Control			1	1					2	\$ 242
Curb and Median Geometry		1	2	8			2		13	\$ 1,465
Civil and Drainage Details		1	4	4			3		12	\$ 1,357
Roadway Plans			2	2			2		6	\$ 632
Side Street Plans									0	\$ -
Driveway Plans									0	\$ -
Cross Drainage Plans									0	\$ -
Storm Drain Channel Plans			1	1			2		4	\$ 390
Landscape									0	\$ -
Pavement Marking/Signing			1	2			2		5	\$ 501
Traffic Signals									0	\$ -
Roadway Lighting									0	\$ -
Cross Section Sheets									0	\$ -
JUT Extension	1	6	8	20			10		45	\$ 5,237

Hours and Fee Estimate: Change Order No. 2 - Raytheon Intersection, JUT, UPRR  
Aerospace Parkway Widening  
Kittelson & Associates

	Project Mgr. Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
	\$74.34	\$54.79	\$42.89	\$36.36	\$25.35	\$36.14	\$24.39	\$21.68		KAI
Tucson Water Relocation (Aerospace)									0	\$ -
Sewer Modifications (Aerospace)									0	\$ -
<b>Subtotal for Model and Plans</b>	<b>1</b>	<b>8</b>	<b>20</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>0</b>	<b>88</b>	<b>\$ 9,955</b>
Plans Hours Only	1	6	12	23	0	0	13	0	55	
% of hours for Plans	80%	75%	60%	60%	60%	90%	60%	100%	63%	

	Project Mgr. Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
<b>Task 5. Construction Documents</b>										KAI
Construction Plans	1	2	8	8	0	0	8	0	27	\$ 3,090
Final Specifications									0	\$ -
Final Estimate	0	0	1	1	0	0	2	0	4	\$ 390
QA/QC Review	1	1							2	\$ 394
<b>Total</b>	<b>2</b>	<b>3</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>33</b>	<b>\$ 3,874</b>
<b>Model and Plans Breakout - 100% Design</b>										
Cover Sheet									0	\$ -
General Notes									0	\$ -
Summary Tables									0	\$ -
Typical Sections									0	\$ -
Horizontal Control									0	\$ -
Curb and Median Geometry			1	1			1		3	\$ 316
Civil and Drainage Details			1	1			1		3	\$ 316
Roadway Plans	1		1	1			1		4	\$ 543
Side Street Plans									0	\$ -
Driveway Plans									0	\$ -
Cross Drainage Plans									0	\$ -
Storm Drain Channel Plans			1	1			1		3	\$ 316
Landscape									0	\$ -
Pavement Marking Signing			1	1			1		3	\$ 316
Traffic Signals									0	\$ -
Roadway Lighting									0	\$ -
JUT Extension		2	4	4			4		14	\$ 1,598
Tucson Water Relocation (Aerospace)									0	\$ -
Sewer Modifications (Aerospace)									0	\$ -
Cross Section Sheets									0	\$ -
<b>Subtotal for Model and Plans</b>	<b>1</b>	<b>2</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>30</b>	<b>\$ 3,406</b>
Plans Hours Only	1	2	8	8	0	0	8	0	27	
% of hours for Plans	80%	90%	90%	90%	90%	90%	90%	100%	90%	

Hours and Fee Estimate: Change Order No. 2 - Raytheon Intersection, JUT, UPRR  
Aerospace Parkway Widening  
Kittelsohn & Associates

	Project Mgr/ Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
	\$74.34	\$54.79	\$42.89	\$36.36	\$25.35	\$36.14	\$24.39	\$21.68		KAI
	Project Mgr/ Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
<b>Task 9. UPRR Coordination</b>										KAI
9.1 Meetings with UPRR (2)									0	\$ -
9.2 Preliminary Engineering Agreement									0	\$ -
9.3 Pima County UPRR Project Agreement									0	\$ -
9.4 Conduit crossing and drainage improvement per	10		16	20					46	\$ 6,578
<b>Total</b>	<b>10</b>	<b>0</b>	<b>16</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>46</b>	<b>\$ 6,578</b>

Labor +OH	\$ 30,715
Fixed Fee	\$ 3,072
Kittelsohn Total	\$ 33,787
Detention Basin Memo (CMG)	\$ 5,122
Additional Native Plant Inventory; Soil Analysis (WDG)	\$ 3,271
Geotechnical Investigation (Ninyo & Moore)	\$ 600
Total	\$ 42,780

Hours and Fee Estimate: Change Order No. 2 - Raytheon Extension; Sewer Modifications  
Aerospace Parkway Widening  
Kittelson & Associates

	Project Mgr Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
	\$74.34	\$54.79	\$42.89	\$36.36	\$25.35	\$36.14	\$24.39	\$21.68		KAI
<b>Concept Design (30%)</b>										KAI
Design Model	0	2	15	11	33	2	21	0	84	\$ 7,850
Concept Plans	2	6	5	3	11	4	9	0	40	\$ 4,403
Cost Estimate		1	2	6		2			11	\$ 1,315
QA/QC Review	1	3							4	\$ 728
Meetings/Coordination	2	2			2			1	7	\$ 1,008
<b>Total</b>	<b>5</b>	<b>14</b>	<b>22</b>	<b>20</b>	<b>46</b>	<b>8</b>	<b>30</b>	<b>1</b>	<b>146</b>	<b>\$ 15,304</b>
<b>Model and Plans Breakout - 30% Design</b>										
Cover Sheet									0	\$ -
General Notes									0	\$ -
Typical Sections		1	2		4		2		9	\$ 887
Horizontal Control			2	4			4		10	\$ 1,003
Roadway Plans	2	4	8	8	30		16		68	\$ 6,565
Side Street Plans									0	\$ -
Driveway Plans									0	\$ -
Culvert Plans		2	8		10		6		26	\$ 2,600
Storm Drain Channel Plans									0	\$ -
Landscape SWPPP									0	\$ -
Pavement Marking/Signing		1		2		6			9	\$ 1,050
Traffic Signals									0	\$ -
Roadway Lighting									0	\$ -
JUT French Adjustments									0	\$ -
Fusion Water Relocation (Aerospace)									0	\$ -
Sewer Modifications (Aerospace)									0	\$ -
Cross Section Sheets							2		2	\$ 149
<b>Subtotal for Model and Plans</b>	<b>2</b>	<b>8</b>	<b>20</b>	<b>14</b>	<b>44</b>	<b>6</b>	<b>30</b>	<b>0</b>	<b>124</b>	<b>\$ 12,253</b>
Plans Hours Only	2	6	5	3	11	4	9	0	40	
% of hours for Plans	80%	70%	25%	20%	25%	70%	30%	100%	32%	
	Project Mgr Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
<b>Preliminary Design (60%)</b>										KAI
Design Model	0	1	6	2	13	0	10	0	32	\$ 2,923
Preliminary Plans	0	4	8	2	20	3	23	0	60	\$ 5,524
Cost Estimate		1	1	2		1			5	\$ 630
QA/QC Review	1	1							2	\$ 394
Meetings/Coordination		2			2			1	5	\$ 555
<b>Total</b>	<b>1</b>	<b>9</b>	<b>15</b>	<b>6</b>	<b>35</b>	<b>4</b>	<b>33</b>	<b>1</b>	<b>104</b>	<b>\$ 10,026</b>
<b>Model and Plans Breakout - 60% Design</b>										
Cover Sheet									0	\$ -
General Notes									0	\$ -
Typical Sections			1		1		1		3	\$ 283
Horizontal Control			1	2			1		4	\$ 427
Curb and Median Geometry		1	2		6		4		13	\$ 1,190
Civil and Drainage Details		1	2		6		6		15	\$ 1,339
Roadway Plans		1	4		16		8		29	\$ 2,522
Side Street Plans									0	\$ -
Driveway Plans									0	\$ -
Culvert Plans		1	4		4		4		13	\$ 1,297
Storm Drain Channel Plans									0	\$ -
Landscape									0	\$ -
Pavement Marking/Signing		1		2		3			6	\$ 720
Traffic Signals									0	\$ -

**Hours and Fee Estimate: Change Order No. 2 - Raytheon Extension; Sewer Modifications**  
**Aerospace Parkway Widening**  
**Kittelson & Associates**

	Project Mgr/ Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
	\$74.34	\$54.79	\$42.89	\$36.36	\$25.35	\$36.14	\$24.39	\$21.68		KAI
Roadway Lighting									0	\$ -
Cross Section Sheets									0	\$ -
JUT Extension									0	\$ -
Tucson Water Relocation (Aerospace)									0	\$ -
Sewer Modifications (Aerospace)									0	\$ -
<b>Subtotal for Model and Plans</b>	<b>0</b>	<b>5</b>	<b>14</b>	<b>4</b>	<b>33</b>	<b>3</b>	<b>24</b>	<b>0</b>	<b>83</b>	<b>\$ 7,778</b>
Plans Hours Only	0	4	8	2	20	3	14	0	51	
% of hours for Plans	80%	75%	60%	50%	60%	90%	60%	100%	61%	

	Project Mgr/ Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
<b>Final Design/Construction Documents</b>										KAI
Final Model	0	0	1	0	1	0	1	0	3	\$ 283
Final Plans	1	5	5	3	6	2	10	0	32	\$ 3,477
Quantities, Estimate, Special Provisions									0	\$ -
QA/QC Review		1							1	\$ 167
Meetings/Coordination	1	1							2	\$ 394
Legal Description										\$ 1,000
<b>Total</b>	<b>2</b>	<b>7</b>	<b>6</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>38</b>	<b>\$ 5,320</b>
<b>Final Design/Construction Documents</b>										
Cover Sheet									0	\$ -
General Notes									0	\$ -
Summary Tables									0	\$ -
Typical Sections									0	\$ -
Horizontal Control									0	\$ -
Curb and Median Geometry			1	1			1		3	\$ 316
Civil and Drainage Details		1	1		1		2		5	\$ 524
Roadway Plans	1	2	2	1	4		6		16	\$ 1,689
Side Street Plans									0	\$ -
Driveway Plans									0	\$ -
Culvert Plans		1	2		2		2		7	\$ 732
Storm Drain Channel Plans									0	\$ -
Landscape									0	\$ -
Pavement Marking Signing		1		1		2			4	\$ 498
Traffic Signals									0	\$ -
Roadway Lighting									0	\$ -
JUT Extension									0	\$ -
Tucson Water Relocation (Aerospace)									0	\$ -
Sewer Modifications (Aerospace)									0	\$ -
Cross Section Sheets									0	\$ -
<b>Subtotal for Model and Plans</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>35</b>	<b>\$ 3,759</b>
Plans Hours Only	1	5	5	3	6	2	10	0	32	
% of hours for Plans	80%	90%	90%	90%	90%	90%	90%	100%	91%	



Hours and Fee Estimate: Change Order No. 2 - Raytheon Extension; Sewer Modifications  
Aerospace Parkway Widening  
Kittelson & Associates

	Project Mgr/ Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
	\$74.34	\$54.79	\$42.89	\$36.36	\$25.35	\$36.14	\$24.39	\$21.68		KAI
	Project Mgr/ Principal	Associate Engineer	Senior Engineer	Engineer	Analyst/ Designer	Senior Technician	Technician	Clerical/ Admin	Hours	Labor +OH Cost
<b>Sewer Modification</b>										KAI
Preliminary Design	1	2	8	16			10		37	\$ 4,125
Final Design		1	4	8			6		19	\$ 2,024
ADEQ Permit		2	6				4		12	\$ 1,417
Meetings		2	4						6	\$ 857
<b>Total</b>	<b>1</b>	<b>7</b>	<b>22</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>74</b>	<b>\$ 8,423</b>

Labor +OH \$ 39,073  
Fixed Fee \$ 3,907  
Kittelson Total \$ 42,980

Raytheon North Leg Drainage Memo (CMG) \$ 5,144  
Legal Description (Darling) \$ 2,000

Total \$ 50,124



# CMG DRAINAGE ENGINEERING, INC.

3555 N. MOUNTAIN AVE. • P.O. BOX 64880 (MAIL) • TUCSON, AZ 85728 • PHONE: (520) 882-4244 • FAX: (520) 888-1421

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November 8, 2017

Jim Schoen, PE  
Kittleson & Associates, Inc.  
2 East Congress Street, Suite 705  
Tucson, Arizona 85701

RE: **Aerospace Parkway Widening Project – Additional Services #1**  
**Drainage Engineering Proposal**  
**Pima County Project Number 4AERO2**

Dear Jason:

CMG Drainage Engineering submits this Aerospace Parkway Widening Project - Additional Services proposal at your request. Our proposed scope of work and fee estimate are shown below.

## **ADDITIONAL SERVICES OVERVIEW**

Additional analysis is required by Pima County to look at stormwater detention requirements for the properties within the Pima County Aerospace, Defense and Technology Business and Research Park (PCADTBPR), more specifically the parcels defined as Parcel A, Parcel B, and Vector-Space Site.

Additionally, Pima County has requested that drainage be analyzed for the realignment of Raytheon Parkway, which includes one proposed box culvert and additional pavement drainage.

The scope of work for this effort includes CMG Drainage Engineering, Inc. (CMG) providing additional services per the meeting discussion on Friday September 22, 2017 and also the attached exhibit (Figure 1) which delineates the Raytheon Parkway realignment. The purpose of which would be to encapsulate in individual memos: 1) the different scenarios of development and the means to phase detention improvements and incorporate them into the basin being designed and constructed by Aerospace Parkway Phase 2; 2) the drainage analysis for the Raytheon Parkway Realignment.

## **WORK TASKS**

### **TASK 1.0 PROJECT ADMINISTRATION**

**Task 1.1 Project Management.** Additional management time is necessary to cover these additional services consistent with the original scope or services.

**Task 1.2 Meetings** This task assumes attendance at up to three (3) drainage workshop meetings.

### **TASK 3.0 ADDITIONAL SERVICES**

**Assumptions:**

1. *Additional services are speculative in nature as the need for them, and the ultimate level of effort to be required is unknown. Therefore, relative budget for these services have been identified, but may be further defined, and or modified, should the need for them or other efforts arise as part of the overall scope of work.*

**Task 3.1 Stormwater Detention Memorandum** CMG will prepare a memo to document the analysis and methodology to establish detention requirements for the PCADTBRP. The analysis will be limited to Parcel A, B, and Vector-Space Site. The analysis will look at the following scenarios:

- Scenario 1 – development isolated to Aerospace Pkwy and Rocket Drive pavement additions. Detention Volume should be determined and sized to be distributed over a 3-acre footprint. It is assumed that this volume can be stored below natural grade.
- Scenario 2 – development includes Scenario 1 plus Initial Developed Area (see attached schematic). Initial developed area will be developed at 100% impervious. Detention Volume should be determined and sized to be distributed over a 3-acre footprint. It is assumed that a detention berm embankment will need to be constructed downstream to allow ponding and add storage volume. The outflow mechanism will be constructed into this berm.
- Scenario 3 – development includes Scenario 2 plus will look at Parcels A and B and potentially the Vector – Space site as developed at 80% impervious. A statement on physical feasibility of detaining in the same 3-acre basin footprint will be provided and calculations will demonstrate the depth and additional embankment height required to provide sufficient volume to mitigate for the increased runoff.

**Task 3.2 Raytheon Pkwy Realignment Drainage Memorandum** CMG will prepare a memo to document the analysis and methodology to support the realignment design of Raytheon Pkwy as shown on Figure 1. The analysis will require proposed culvert analysis using HEC-RAS and pavement drainage calculations to ensure the public roadway meets Pima County Department of Transportation pavement drainage requirements.

We await your notice to proceed on these additional services. Please contact me if you have questions or need additional information.

Sincerely,  
CMG Drainage Engineering, Inc.



Scott J Altherr, P.E., CFM  
Principal

Attachment: Fee Estimate Table; Rate Schedule; Schematic of PCADTBRP, Figure 1



# CMG DRAINAGE ENGINEERING, INC.

3555 N. Mountain Ave. • P.O. Box 64880 (mail) • Tucson, AZ 85728 • phone: (520) 882-4244 • fax: (520) 888-1421

## FEE ESTIMATE

Project Name: Additional Services: Aerospace Parkway Widening Project (4AERO2)

Date: November 7, 2017

### I. LABOR

Task 1.1: Project Management				
Personnel	Rate*	Hours		Fee
Project Principal	\$ 140.00	1	\$	140.00
Project Manager	\$ 125.00	4	\$	500.00
Sr Project Engineer	\$ 115.00	0	\$	-
Project Engineer	\$ 95.00	0	\$	-
Designer	\$ 78.00	0	\$	-
CADD Tech	\$ 68.00	0	\$	-
Clerical / Administration	\$ 50.00	0	\$	-
Sub-Total			\$	640.00

Task 1.2: Meetings				
Personnel	Rate*	Hours		Fee
Project Principal	\$ 140.00	2	\$	280.00
Project Manager	\$ 125.00	4	\$	500.00
Sr Project Engineer	\$ 115.00	0	\$	-
Project Engineer	\$ 95.00	0	\$	-
Designer	\$ 78.00	0	\$	-
CADD Tech	\$ 68.00	0	\$	-
Clerical / Administration	\$ 50.00	0	\$	-
Sub-Total			\$	780.00

Task 3.1: Stormwater Detention Memorandum				
Personnel	Rate*	Hours		Fee
Project Principal	\$ 140.00	1	\$	140.00
Project Manager	\$ 125.00	24	\$	3,000.00
Sr Project Engineer	\$ 115.00	0	\$	-
Project Engineer	\$ 95.00	0	\$	-
Designer	\$ 78.00	4	\$	312.00
CADD Tech	\$ 68.00	0	\$	-
Clerical / Administration	\$ 50.00	0	\$	-
Sub-Total			\$	3,452.00

Task 3.2: Raytheon Pkwy Realignment Drainage Memorandum				
Personnel	Rate*	Hours		Fee
Project Principal	\$ 140.00	1	\$	140.00
Project Manager	\$ 125.00	20	\$	2,500.00
Sr Project Engineer	\$ 115.00	16	\$	1,840.00
Project Engineer	\$ 95.00	0	\$	-
Designer	\$ 78.00	8	\$	624.00
CADD Tech	\$ 68.00	0	\$	-
Clerical / Administration	\$ 50.00	0	\$	-
Sub-Total			\$	5,104.00

<b>TOTAL LABOR</b>			\$	<b>9,976.00</b>
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\* Includes overhead at (127)% of labor and profit at (10)% of labor and overhead.

### II. ESTIMATE OF DIRECT EXPENSES

Reproduction	\$	150.00
General large format scanning & plotting	\$	50.00
General in-house photocopying	\$	50.00
<b>TOTAL DIRECT EXPENSES</b>	\$	<b>250.00</b>

<b>TOTAL NOT-TO-EXCEED BASE PROJECT COST</b>	\$	<b>10,226.00</b>
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## RATE SCHEDULE

DATE: 4/8/2017

PROJECT: Engineering Services: Aerospace Parkway Widening Project

PREPARED BY: Scott Altherr, CMG SOLICITATION NUMBER: 247691

EFFECTIVE DATE:  PRIME CONTRACTOR: Kittleson & Associates, Inc.

CONTRACT TIME:  CONTRACT TYPE:

Item No.	Firm	Discipline	A Direct Labor Rate	B Overhead	C Profit	D Billing Rate
				127.0%	10.0%	
1	CMG Drainage Engineering, Inc.	Project Principal	\$ 56.05	\$ 71.18	\$ 12.72	\$ 140
2	CMG Drainage Engineering, Inc.	Project Manager	\$ 50.06	\$ 63.58	\$ 11.36	\$ 125
3	CMG Drainage Engineering, Inc.	Sr Proj Eng / Hydrologist	\$ 45.89	\$ 58.28	\$ 10.42	\$ 115
4	CMG Drainage Engineering, Inc.	Proj Eng / Hydrologist	\$ 38.05	\$ 48.32	\$ 8.64	\$ 95
5	CMG Drainage Engineering, Inc.	Designer	\$ 31.23	\$ 39.66	\$ 7.09	\$ 78
6	CMG Drainage Engineering, Inc.	CADD Technician	\$ 27.23	\$ 34.59	\$ 6.18	\$ 68
7	CMG Drainage Engineering, Inc.	Clerical / Admin	\$ 20.02	\$ 25.43	\$ 4.54	\$ 50
8				\$ -	\$ -	\$ -
9				\$ -	\$ -	\$ -
10				\$ -	\$ -	\$ -

### Formulas

(A) Direct Labor Rate

(B) Overhead @ 127% x (A)

(C) Profit @ 10% x (A + B)

(D) Billing Rate (A + B + C)

**Scenario 1:** Accounts for additional flows from the Aerospace Widening and Rocket Drive pavement only.

**Scenario 2:** Accounts for scenario 1 flows plus initial developed area between Rocket Drive and the Southern Extension. (Green Area)

**Scenario 3:** Accounts for scenario 2 plus a fully developed drainage area CP1 with 50% impervious ground. (Pink Area)

**Scenario 4:** Accounts for scenario 2 plus a fully developed drainage area CP1 with 80% impervious ground. (Pink Area)



For comparison purposes, the footprint area and dirt generated assumes a flat bottom basin, 1 ft deep. Variations can be considered in detailed design.

① SCENARIO 1 - 1.1ac FOOTPRINT  
2,300CY DIRT GENERATED

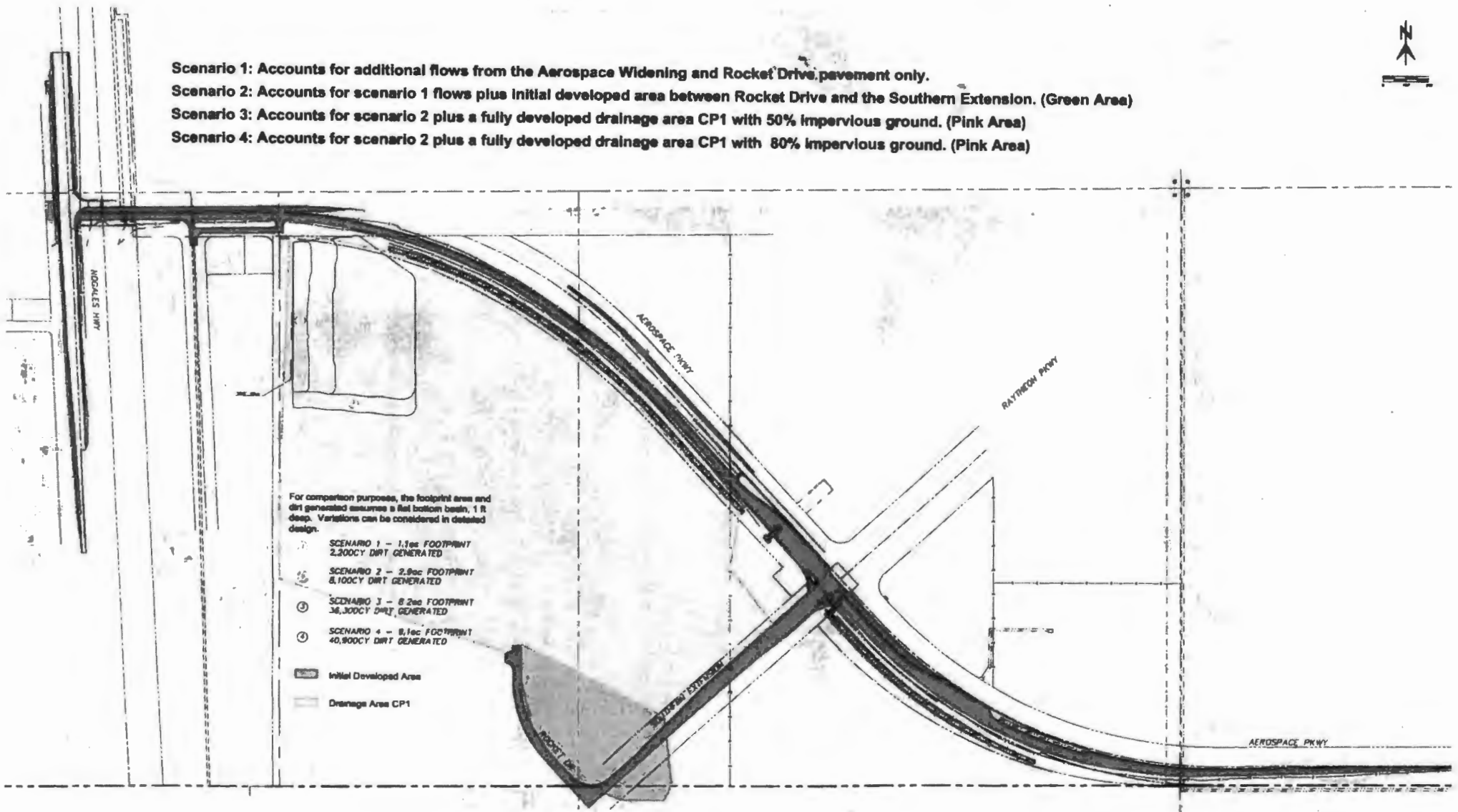
② SCENARIO 2 - 2.9ac FOOTPRINT  
6,100CY DIRT GENERATED

③ SCENARIO 3 - 8.2ac FOOTPRINT  
36,300CY DIRT GENERATED

④ SCENARIO 4 - 8.1ac FOOTPRINT  
40,900CY DIRT GENERATED

Initial Developed Area

Drainage Area CP1





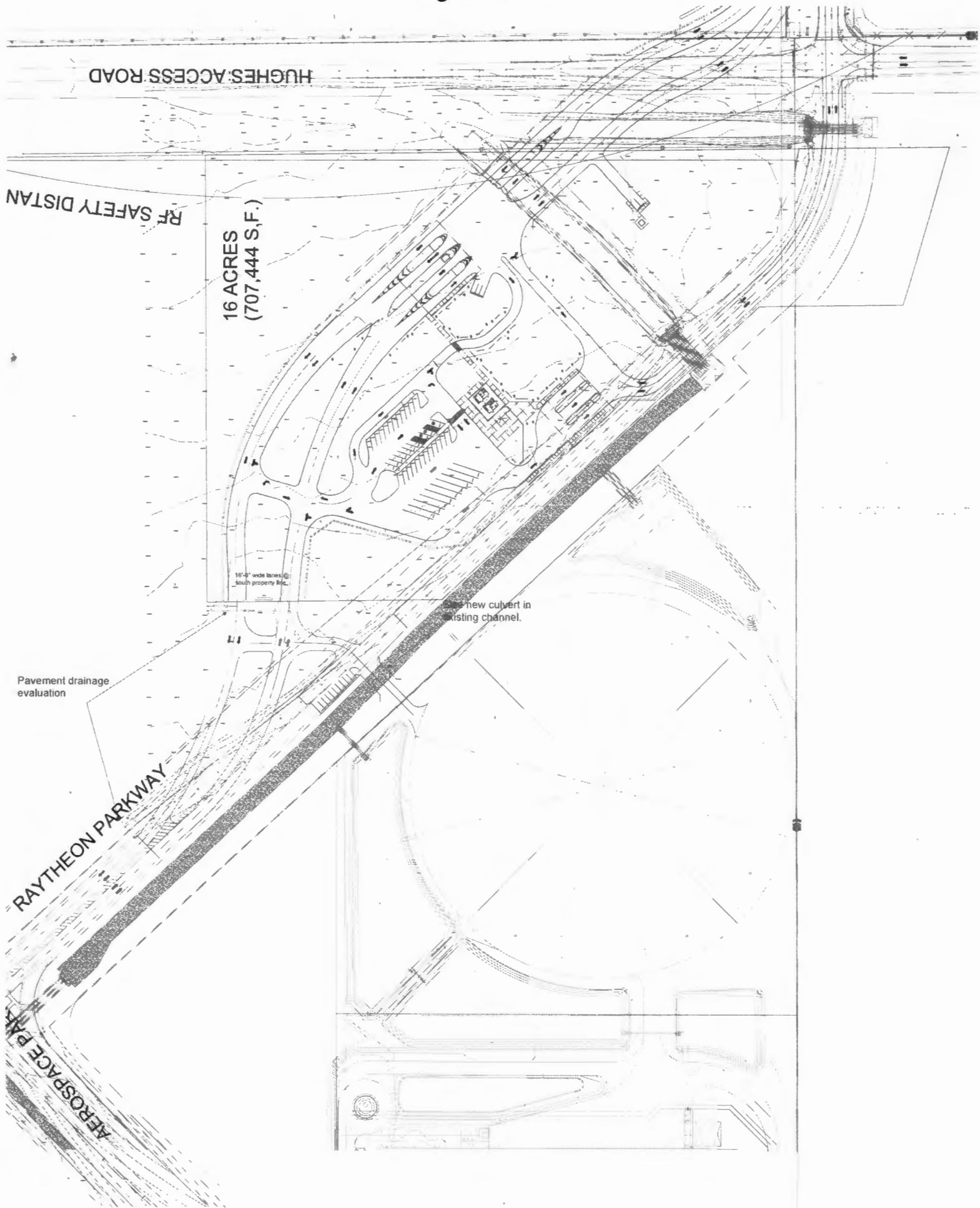
Pima County Aerospace, Defense and  
Technology Business and Research Park



0 1,000 Feet



Figure 1





# WHEAT DESIGN GROUP

LANDSCAPE ARCHITECTS

October 6, 2017

Jim Schoen  
Kittelson & Associates, Inc.  
2 East Congress Street, Suite 705  
Tucson, Arizona 85701

**Re: Aerospace Parkway Widening Project – Contract Modification for Detention Basin design support & Soil Sampling  
Kittelson project no. #20894**

Dear Jim,

We are pleased to submit this contract modification for landscape architectural services for the Aerospace Widening project. For this contract modification, WDG scope includes detention basin design support, additional native plant inventory for the detention basin area and updating the NPI report, additional erosion control design for the detention basin area, and soil sampling.

Please refer to the following Fee Estimate Summary and Workhour Estimate for a detailed breakdown of services offered.

Wheat Design Group (WDG) recommends that a soil analysis be conducted for the Aerospace Parkway Widening Project. Previous seeding efforts along Hughes Access Road proved unsuccessful; therefore, WDG suggests that a soil analysis be conducted to help determine if soils in the project area are not adequate for seed germination.

WDG contracted Inter AG Services, Inc. (IAS) Laboratories for soil analyses on previous roadway projects, and have found their services to be professional and thorough. An initial discussion between WDG and IAS regarding the Widening Project provided the following information:

1. The "Complete Soil Test" is the best option for determining problems in the soil. Results are available within 3 days of receiving the soil samples. The resulting soil analysis report provides a profile of soil characteristics in addition to soil amendment recommendations.
2. An additional "Herbicide Bioassay" test determines if pre-emergent herbicides are present in the soil. The IAS Lab plants agricultural grade seeds in the soil samples and monitors for germination. Results are available within 10-12 days of receiving the soil samples.
3. Soil sampling can be completed by WDG and sent to the IAS Lab in Phoenix for testing.

WDG would be responsible for collecting the soil samples onsite and mailing the samples to the IAS Lab. Per the project area, 5 soil samples would be required. IAS will perform a "Complete Soil Test" and "Herbicide Bioassay".

We look forward to continuing our work together on this project.

Sincerely,



Laura Mielcarek, Principal  
Wheat Design Group, Inc.

**Wheat Design Group DERIVATION OF COST PROPOSAL SUMMARY**

PROJECT:	<b>Aerospace Parkway Widening Project</b>	DATE:	10/06/17
	<b>Contract Modification #1</b>	CONTRACT NO.:	
DBE:	Yes #1025	CONSULTANT:	<b>Wheat Design Group, Inc.</b>
PREPARED BY:	Laura Mielcarek, Principal		
CONTRACT TIME:	6 months		
KITTELSON PROJECT NO:	20894		

**DIRECT LABOR COST**

TASK DESCRIPTION		No. HOURS	HOURLY RATE	TOTAL COST
	CLASSIFICATION	<u>Hours</u>	<u>Rates</u>	<u>Cost</u>
Landscape Architectural Services	Principal	3	\$48.00	\$144.00
	Project Manager	2	\$36.00	\$72.00
	A/E	15	\$31.20	\$468.00
	Designer	5	\$27.00	\$135.00
(A) Direct Labor		25	Hrs.	<u><b>\$819</b></u>

**NEGOTIATED OVERHEAD**

(B) OH Rate x (A)	188.10%	x	\$819.00	=	<u><b>\$1,541</b></u>
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**PROFIT**

(C) % Profit Rate x (A+B)	10.0%	x	\$2,359.54	=	<u><b>\$236</b></u>
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**OTHER DIRECT EXPENSES**

(D) Other Direct Expenses				=	<u><b>\$0</b></u>
(E) IAS LABORATORIES				=	<u><b>\$675</b></u>

**ESTIMATED FEES**

(F) TOTAL CONSULTANT FEE				=	<u><b>\$3,271</b></u>
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Wheat Design Group Workhour Estimate by Task						
Description		Principal Landscape Architect	Project Manager	A/E	Designer	TOTAL
<b>Soil Sampling</b>						
Soil Sampling & Coordination		1	0	6	0	7
<b>Subtotal</b>		<b>1</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>7</b>
<b>Detention Basin</b>						
Research of Pima County detention basin standards		1	0	1	0	2
Design Coordination with Kittelson		1	1	3	0	5
Native Plant Inventory and Revisions to NPI report		0	0	3	3	6
Additional erosion control design		0	1	2	2	5
<b>Subtotal</b>		<b>2</b>	<b>2</b>	<b>9</b>	<b>5</b>	<b>18</b>
<b>TOTAL WORKHOURS</b>		<b>3</b>	<b>2</b>	<b>15</b>	<b>5</b>	<b>25</b>



Geotechnical & Environmental Sciences Consultants

October 13, 2017  
Project No. 605447001

Mr. Jason Schoen, PE  
Kittelson & Associates, Inc.  
2 East Congress Street, Suite 705  
Tucson, Arizona 85701

Subject: Proposal to Perform Geotechnical Engineering Services – Change Order No. 2  
Aerospace Parkway Widening, Pima County, Arizona

Dear Mr. Schoen:

Ninyo & Moore is pleased to submit this Change Order No. 2 to our proposal to perform geotechnical engineering services for the subject project. This change order is based on the information that we received from your office and our subsequent conversations.

#### SCOPE OF SUPPLEMENTAL GEOTECHNICAL SERVICES

- Perform additional analyses for the new roadway pavement sections.

#### FEE ESTIMATE FOR SUPPLEMENTAL GEOTECHNICAL SERVICES

We propose to perform the work scope described above for a fixed fee of \$600.05 (Six Hundred Dollars and Five Cents). Any additional services, not included in the aforementioned scopes, will be charged on a time-and-materials basis in accordance with our current Schedule of Fees.

We appreciate the opportunity to be of service to you on this project.

Respectfully submitted,  
**NINYO & MOORE**

Marek J. Kasztalski, PE  
Senior Geotechnical Engineer

Fred F. Narcaroti  
Principal/Tucson Office Manager

MJK/FFN/jom

Attachment: Fee Estimate

Distribution: (1) Addressee (via e-mail)

FEE ESTIMATE FOR GEOTECHNICAL SERVICES  
AEROSPACE PARKWAY, PIMA COUNTY, ARIZONA

**Data Compilation/Analysis**

Classification	Estimated Hours	Direct Rate	Overhead 150%	Profit 10%	Loaded Costs
Principal Engineer		\$65.45	\$163.63	\$179.99	\$0.00
Senior Project Engineer	4	\$54.55	\$136.38	\$150.01	\$600.05
Staff Engineer		\$40.00	\$100.00	\$110.00	\$0.00
Engineering Assistant		\$27.27	\$68.18	\$74.99	\$0.00
Drafting Technician		\$27.27	\$68.18	\$74.99	\$0.00
Secretarial		\$20.00	\$50.00	\$55.00	\$0.00
	<u>4</u>				<u>\$600.05</u>
Total Proposed Fee					<b>\$600.05</b>