

PANAMA CANAL AUTHORITY	VARIATION	PAGE 1 OF 9
1. REQUEST FOR PROPOSAL No.:  76161	2. CONTRACT No.:  CMC-221427	3. DATE: June 14, 2016
		4. VARIATION No.: 170

5. ISSUED BY:

PANAMA CANAL AUTHORITY  
Employer's Representative  
Locks Project Management Division  
Building 740, Corozal  
Panama, Republic of Panama

6. NAME AND ADDRESS OF CONTRACTOR (INCLUDE PHYSICAL & POSTAL ADDRESS)  Grupo Unidos por el Canal, S.A. Building 22B, Brujas Road Cocoli, Republic of Panama	7. CONTRACTOR'S TELEPHONE NUMBER:  507-316-9900
	8. CONTRACTOR'S FACSIMILE NUMBER:

**9. VARIATION:**

The contract referred to in item No. 2 is hereby varied as set forth in item 10, entitled "DESCRIPTION OF VARIATION".

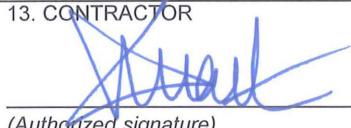

YES. NO. The contractor shall send a copy, duly signed, of this Variation to the Employer's Representative/Contracting Officer.

	9 A. THIS VARIATION IS EXECUTED ON THE BASIS OF: (Specify the legal authority).  THE VARIATION DESCRIBED IN ITEM 10 IS HEREBY INCORPORATED AND MADE A PART OF THE CONTRACT.
	9 B. THE CONTRACT REFERRED TO IN ITEM NO. 2, IS VARIED TO INCORPORATE ADMINISTRATIVE CHANGES (such as the paying office, account numbers, etc.).
X	9 C. THIS BILATERAL AGREEMENT IS SIGNED AND INCORPORATED INTO THE CONTRACT REFERRED TO IN ITEM NO. 2 OF THIS FORM, ON THE BASIS OF: (Specify the legal authority) <b>Volume III, Conditions of Contract, Sub-Clause 1.16 [Entire Agreement], 4<sup>th</sup> Paragraph</b>
	9 D. OTHER. (Specify manner and the legal authority).
	9 E. ACCOUNT NUMBER (If required):

**10. DESCRIPTION OF THE VARIATION** (List in accordance with the order of the Contract. If additional space is required, use blank sheets).

### See Variation Agreement Enclosed

Except for the variation(s) herein specified, all other terms and conditions of the Contract remain unchanged.

11. NAME AND TITLE OF THE PERSON AUTHORIZED TO SIGN (Type or print)  Giuseppe Quarta Contractor's Representative	12. NAME AND TITLE OF THE EMPLOYER'S REPRESENTATIVE/CONTRACTING OFFICER (Type or print)  Jorge de la Guardia, Employer's Representative
13. CONTRACTOR   (Authorized signature)	14. DATE: 14/VI/2016
	15. PANAMA CANAL AUTHORITY   (Employer's Representative/Contracting Officer's signature)
	16. DATE: 14/VI/2016

June 14, 2016

Design and Construction of the Third Set of Locks

**This Variation Agreement Number 170, is dated as of the 14<sup>th</sup> day of June 2016 and made**

**Between:** Autoridad del Canal de Panama, Building 740, Corozal, Panama, Republic of Panama (hereinafter called the "**Employer**") on the one part,

**and**

Grupo Unidos por el Canal, S.A., of Building 22B, Brujas Road, Cocoli, Panama, Republic of Panama, a corporation organized under the laws of the Republic of Panama, registered under microjacket number 682266, document number 1683284 of the Mercantile Section of the Public Registry Office of the Republic of Panama (hereinafter called the "**Contractor**" and together with Employer, the "**Parties**") on the other part.

**Whereas:**

- (a) The Employer and the Contractor are party to Contract CMC-221427 for the Design and Construction of the Third Set of Locks, dated August 11, 2009 (as the same has been or may be varied, amended, supplemented or otherwise modified (the "**Contract**")).
- (b) By RFV 0231 dated December 26, 2013, the Contractor requested a modification of the Employer's Requirements to use magnetic transducers for the measurement of flow rates for foam and DPI transducers for water. By letters IAE-UPC-2972 dated April 29, 2016 and GUPC-IAE-4814 dated May 10, 2016 the Employer and the Contractor agreed that, subject to the Parties entering into this Variation Agreement No. 170, there would be no increase in the Contract Price in respect of such modification.
- (c) By letter IAE-UPC-2250 dated September 16, 2014, the Employer requested a proposal from the Contractor for the modification of the Employer's Requirements to clarify that loudspeakers in crossunders should be explosion-proof. By letters IAE-UPC-2972 dated April 29, 2016 and GUPC-IAE-4814 dated May 10, 2016 the Employer and the Contractor agreed that, subject to the Parties entering into this Variation Agreement No. 170, there would be no increase in the Contract Price in respect of such modification.
- (d) By letter IAE-UPC-0609 dated May 4, 2011, the Employer requested a proposal for a modification of the coverage area of the monitor towers. The Parties subsequently entered into Variation Agreement No 40 (VO 40) which provided for a reduction in the Contract Price and eight monitor towers and other equipment (items 1 to 5 in the Table referred to in paragraph 4 of VO 40) to be delivered to the Employer instead of being installed by the Contractor. By letters IAE-UPC-2972 dated April 29, 2016 and GUPC-IAE-4814 dated May 10, 2016 the Employer and the Contractor agreed that, subject to the Parties entering into this Variation Agreement No. 170, the Contractor would no longer be obliged to deliver items 1 to 5 in the Table referred to in Paragraph 4 of VO 40 and that there would be a reduction in the Contract Price of \$317,886.48.



- (e) By letters IAE-UPC-2972 dated April 29, 2016 and GUPC-IAE-4814 dated May 10, 2016 the Employer and the Contractor agreed that, subject to the Parties entering into this Variation Agreement No. 170, the Contractor would carry out the associated hardware work required to connect all data cable terminations in data/voice structured cabling systems of the Control Building (CB), Backup Control Building (BCB), Maintenance Building (MB) and Guard House (GH) at the Agua Clara and Cocoli Locks to the Employer's intranet through IPBTS (IP Based Telephone System) Core Switches and that there would be no increase in the Contract Price in respect of such modification.
- (f) Therefore, subject to the terms of this Variation Agreement No. 170, the Parties have agreed to a variation to the Contract as hereinafter stated, but not further or otherwise.

**THE PARTIES HEREBY AGREE AS FOLLOWS:**

The Employer and the Contractor agree to vary the Contract as follows:

1. In this Variation Agreement No. 170, the words and expressions shall have the same meanings as are respectively assigned to them in the Contract, save as amended below or as expressly stated.
2. It is agreed that this Variation Agreement No. 170 and the modifications contained herein are approved and dated in writing by the authorized representatives of the Contractor and the Employer and in doing so the Parties acknowledge and identify that this is done in accordance with Sub-Clause 1.16 [*Entire Agreement*] of the Contract.
3. The Parties acknowledge and agree that this Variation Agreement No. 170 shall not be deemed to settle any outstanding issues, claims, demands, actions, disputes or proceedings between the Parties including but not limited to those in relation to any delay to the Works (both as to time and costs) and all such issues, claims, demands, actions, disputes or proceedings remain in contention between the Parties and all respective rights, remedies, claims and defenses of the Parties including but not limited to those concerning and arising out of any delay and/or responsibility for delay and the consequences thereof remain fully reserved. The Parties expressly agree that no Party is waiving, making an admission with respect to, or intending to prejudice any claims, defenses, arguments or remedies that any of them has or may have arising out of events up to and including the date of this Variation Agreement No. 170 or in the future concerning their respective performance under and in relation to the Contract. For the avoidance of doubt, all delay-related issues between the Contractor and the Employer, and their respective rights and remedies regarding responsibility for delay and the consequences thereof, remain fully reserved. Nothing in this Variation Agreement No. 170 will have the effect of changing or extending the Time for Completion or any Milestone Dates under the Contract or entitle the Contractor to Excusable Delay. For the avoidance of doubt, this Variation Agreement No. 170 is without prejudice to each Party's position in any current or future DAB



June 14, 2016

## Design and Construction of the Third Set of Locks

and/or arbitration proceedings pursuant to Sub-Clauses 20.4 [Obtaining Dispute Adjudication Board's Decision] and/or 20.6 [Arbitration] respectively (including but not limited to ICC References 20910/ASM, 20911/ASM and 19962/ASM).

4. Save where expressly stated and in relation to breaches of, or failure by either Party to comply with, the terms of this Variation Agreement No. 170, the Parties agree that they shall have no claims for additional time or money or any other relief or entitlement of any kind as a direct consequence of this Variation Agreement No. 170.
5. Further, the Contractor's obligations as to the progress of the Works and to complete the Works and comply with the Contract remain in all respects unaffected and nothing within this Variation Agreement No. 170 is intended to be a waiver or relaxation of the Contractor's obligations under the Contract, save only as expressly stated herein and the Contract shall remain fully effective as varied herein and the Contract shall have effect as though the provisions contained in this Variation Agreement No. 170 had been originally contained in the Contract.
6. This Variation Agreement No. 170 shall be governed by the Laws of the Republic of Panama and is deemed to be incorporated into and form an integral part of the Contract.
7. **Sub-Clause 1.1 [Definitions] of the Conditions of Contract** shall be amended by the addition of the following definitions under Sub-Clause 1.1.6 [Other Definitions] (which shall be added in proper alphabetical order but without any number):

*"Variation Agreement No. 170" means Variation Agreement Number 170, dated June 14, 2016 between the Employer and the Contractor.*

8. **Volume II, Part 2, Paragraph 1.03.B.6 of Section 40 91 00 [Primary Process Measurement Devices] of the Employer's Requirements** that currently reads

**6. Flow Transducers:**

- a. Units shall be differential pressure to current (DPI) transducers with the following or better characteristics:

<b>Table 40 91 00 – 2: Flow Transducer Characteristics</b>		
<i>Accuracy</i>		$\pm 0.15\%$ of span
<i>Effects</i>	<i>Hysteresis</i>	$\pm 0.05\%$ of span
	<i>Static Pressure</i>	$\pm 0.45\%$ of span for combined zero and span per 70 bar
	<i>Supply Voltage</i>	$\pm 0.01\%$ of span
	<i>Temperature</i>	$\pm 0.25\%$ of span for combined zero and span per 28°C

June 14, 2016

## Design and Construction of the Third Set of Locks

<b>Table 40 91 00 – 2: Flow Transducer Characteristics</b>		
<i>Housing</i>		<i>NEMA 4X</i>
<i>Materials</i>	<i>Reduction coupling or adapter flange</i>	<i>Carbon Steel or bronze, size as required</i>
	<i>Bolting</i>	<i>Carbon Steel</i>
	<i>Fill Fluid</i>	<i>Silicon oil</i>
	<i>Head Gaskets</i>	<i>Teflon</i>
	<i>Mounting Bracket</i>	<i>Zinc-plated carbon steel, horizontal or vertical mounting on a 50 mm (2 in) pipe on for wall mounting</i>
	<i>Process Barrier Diaphragms</i>	<i>316L ss</i>
	<i>Process Head</i>	<i>Carbon Steel</i>
	<i>Adapter Fitting</i>	<i>Carbon steel or bronze</i>
<i>Output</i>		<i>4-20 mADC factory calibrated, two wire analog output</i>
<i>Overpressure</i>		<i>207 bar (3,000 psi) or 1.5 times the upper range limit, whichever is the highest</i>
<i>Power Supply</i>		<i>As recommended by the manufacturer and reviewed by the Employer's Representative</i>

shall be deleted and replaced with:

## 6. Flow Transducers:

### (a) General:

- 1) *Units shall be adequate for the liquid whose flow is being measured.*
- 2) *Transducers for measuring flow rate of water and non-viscous liquids shall be Differential Pressure-to-Current (DPI) type.*
- 3) *Transducers for measuring flow rate of foam concentrate and viscous liquids shall be magnetic flow type.*
- 4) *Common characteristics shall be as follows or better:*

<b>Table 40 91 00 – 2.1: Flow Transducer Common Characteristics</b>	
<i>Accuracy</i>	<i>± 0.15% of span</i>
<i>Housing</i>	<i>NEMA 4X</i>

June 14, 2016

## Design and Construction of the Third Set of Locks

<i>Table 40 91 00 – 2.1: Flow Transducer Common Characteristics</i>	
<i>Output</i>	<i>4-20 mADC, factory calibrated, two wire</i>
<i>Power Supplies</i>	<i>As recommended by the manufacturer and reviewed by the Employer's Representative</i>
<i>Temperature Effects</i>	<i>±0.25% of span for combined zero and span per 28°C</i>

- (b) **DPI Flow Transducers:** Shall have the following or better characteristics:

<i>Table 40 91 00 – 2.2: DPI Flow Transducer Characteristics</i>		
<i>Effects</i>	<i>Hysteresis</i>	<i>± 0.05% of span</i>
	<i>Static Pressure</i>	<i>±0.45% of span for combined zero and span per 70 bar</i>
	<i>Supply Voltage</i>	<i>±0.01% of span</i>
<i>Materials</i>	<i>Reduction coupling or adapter flange</i>	<i>Carbon Steel or bronze, size as required</i>
	<i>Bolting</i>	<i>Carbon Steel</i>
	<i>Fill Fluid</i>	<i>Silicon oil</i>
	<i>Head Gaskets</i>	<i>Teflon</i>
	<i>Mounting Bracket</i>	<i>Zinc-plated carbon steel, horizontal or vertical mounting on a 50 mm (2 in) pipe on for wall mounting</i>
	<i>Process Barrier Diaphragms</i>	<i>316L SS</i>
	<i>Process Head</i>	<i>Carbon Steel</i>
	<i>Adapter Fitting</i>	<i>Carbon steel or bronze</i>
<i>Overpressure</i>		<i>207 bar (3,000 psi) or 1.5 times the upper range limit, whichever is the highest</i>

- (c) **Magnetic Flow Transducers:** Shall have the following or better characteristics:

June 14, 2016

## Design and Construction of the Third Set of Locks

<i>Table 40 91 00 – 2.3: Magnetic Flow Transducer Characteristics</i>		
<i>Effects</i>	<i>Minimum Conductivity</i>	<i>5 <math>\mu</math>siemens/cm</i>
	<i>Repeatability</i>	<i><math>\pm 0.1\%</math> of span</i>
	<i>Stability</i>	<i><math>\pm 0.1\%</math> of flow rate</i>
	<i>Velocity Range</i>	<i>0-12 m/s</i>
<i>Materials</i>	<i>Bolts</i>	<i>Carbon Steel ASTM A193, B7, class 1 / ASTM A194, 2H</i>
	<i>Electrodes</i>	<i>2 x 316L SS</i>
	<i>Inside Lining</i>	<i>Polytetrafluoroethylene (PTFE) or Teflon</i>
	<i>Mounting Kit</i>	<i>Mounting rings ASME B16.5 ANSI 150)</i>
	<i>Sensor Housing</i>	<i>303 SST / CF3M / CF8M type 304/304L</i>
	<i>Transmitter Housing</i>	<i>Aluminum</i>
<i>Overpressure</i>		<i>300 psi"</i>

9. **Volume II, Part 2, Paragraph 1.03.B.13 of Section 27 51 16 [Public Address Systems] of the Employer's Requirements** that currently reads:

13. **Speakers:**

a. **General:**

1. *Speakers shall have directivity as required to cover the areas indicated in Section 01 81 36.13 (O & M Buildings and Facilities – Space Programming), including all buildings, the entire lock chamber side walls, WSBs, Crossunders, rolling gate passageways, and all cable galleries.*
2. *Each unit shall include a matching transformer as required.*
3. *Speakers shall be equipped and ready for pole or wall mounting, as required.*

- b. **Speakers for Inside Use:** *Shall have one or two cones and drivers, and handle a minimum of 15 watts RMS.*

June 14, 2016

Design and Construction of the Third Set of Locks

---

c. **Speakers for Crossunder and Exterior Use:**

1. *Speakers shall be weatherproof and have single or dual horns (bidirectional or two cones and drivers), with dispersion as required.*
2. *Units shall have a power handling rating not to exceed a value that can cause intelligibility problems.*
3. *Mounting brackets, transformer boxes, and hardware to be used in exterior locations shall be of corrosion resistant materials*

shall be deleted and replaced with:

13. **Speakers:**

a. **General:**

1. *Speakers shall have directivity as required to cover the areas indicated in Section 01 81 36.13 (O & M Buildings and Facilities – Space Programming), including all buildings, the entire lock chamber side walls, WSBs, Crossunders, rolling gate passageways, and all cable galleries.*
2. *Each unit shall include a matching transformer as required.*
3. *Speakers shall be equipped and ready for pole or wall mounting, as required.*
4. *Mounting brackets, transformer boxes, and hardware shall be of corrosion resistant materials.*

b. **Speakers for Inside Use:** *Shall have one or two cones and drivers, and handle a minimum of 15 watts RMS.*

c. **Speakers for Crossunder Use:** *Units shall be explosion proof and UL listed for locations as classified by NFPA 70.*

d. **Speakers for Exterior Use:** *Units shall be weatherproof.*

10. **Variation Agreement No 40 Paragraph 4** which currently reads:

4. *As a result of the Employer's instruction to reduce the area of coverage, the total number of cannons to be installed is 8 per complex, for a total of sixteen. Accordingly, Items 1 through 5, Atlantic and Pacific, listed in the Table below, [Reference letter GUPC-IAE-1198, of April 17, 2012], which need not be installed should be provided to the Employer.*



shall be deleted and replaced with:

4. *As a result of the Employer's instruction to reduce the area of coverage, the total number of cannons to be installed is 8 per complex, for a total of sixteen. Accordingly (and as a consequence of the provisions of Variation Agreement No 170) Items 1 through 5, Atlantic and Pacific, listed in the Table below, [Reference letter GUPC-IAE-1198, of April 17, 2012] need not be installed nor provided to the Employer.*
11. **Volume II, Part 2**, there shall be a new **Paragraph 1.04.J in Section 01 81 26 [Comm., Control, Safety & Security Sys.] of the Employer's Requirements** as follows:
  - J. ***Intranet Connections:*** *Design and installation shall include all necessary hardware to interconnect all data terminations in data/LAN structured cabling systems (ref. Section 27 10 00) of new locks Control Buildings, Backup Control Buildings, Guard Houses, and Maintenance buildings to the Employer's intranet through the demarcation points. DPE and office automation hardware that must have access to ACP Intranet services from the above terminations includes, but is not limited to, the following:*
    - (a) *AIS, EVTMS, and office workstations supplied and installed by the Contractor.*
    - (b) *Workstations, laptops, printers, and other as required that will be installed or used by the Employer.*
12. The Contract Price shall be reduced by \$317,886.48.
13. Each Party shall from time to time (at its own cost) do, perform, sign, execute and deliver all such acts, deeds, documents and things (or procure the doing, performance, signing, execution or delivery of them) to give full effect to this Variation Agreement No. 170 and secure the full benefit of the rights, powers and remedies conferred upon it in this Variation Agreement No. 170.

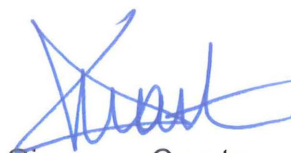
**In Witness** whereof the Parties hereto have caused this Variation Agreement No. 170 to the Contract to be executed on the 14<sup>th</sup> day of June of the year 2016 by their duly authorized representatives.

For ACP



Jorge de la Guardia  
Employer's Representative

For GUPCSA



Giuseppe Quarta  
Contractor's Representative