

PANAMA CANAL AUTHORITY	VARIATION	PAGE 1 OF 8
1. REQUEST FOR PROPOSAL No.: RFP-76161	2. CONTRACT No.: CMC-221427	3. DATE: November 16, 2012 4. VARIATION No.: 54

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:
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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) Volume III, Conditions of Contract, Sub-Clause 1.16 [Entire Agreement], 4 th Paragraph
	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 attached

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) Bernardo Gonzalez 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: 22/11/2012 15. PANAMA CANAL AUTHORITY  (Employer's Representative/Contracting Officer's signature)
	16. DATE: 19/11/2012

BACKGROUND

The Contractor has proposed a Value Engineering Proposal pursuant to Sub-Clause 13.2 [Value Engineering] of the Conditions of Contract, related to the centralized design of the DC Power Distribution System specified in the Employer's Requirements and offered in the Contractor's Technical Proposal and replaced by a distributed DC Power System, which is now being proposed by the Contractor in RFV 0047 and additional modifications.

A list of the correspondence exchanged between the Employer and the Contractor in connection with the Value Engineering Proposal follows:

IAE-UPC-0484 of January 19, 2011
IAE-UPC-0738 of August 15, 2011

GUPC-IAE-0875 of August 8, 2011
GUPC-IAE-1103 of February 8, 2012

The understandings established through the above exchange of correspondence, constitute the basis for this Variation No. 54.

SCOPE

As a result of the Value Engineering Proposal, the Contractor and the Employer have agreed on the following:

1. Implementation of the Bridgestone bumper system for the fender system to be installed at the Lock Chambers with the vertical fender spacing of 30m.
2. Design and build two (2) oil spill control rooms and one (1) emergency generator room at each Lock Complex.
3. Relocate the Maintenance Buildings located at the upper level of the Atlantic Complex, to the lower level in the vicinity of the Spare Storage Building.
4. Design and build the DC power distribution system as per GUPC's proposed RFV 0047

In this connection, the following changes are hereby incorporated to the Employer's Requirements:

1. **Volume II, Part 2, Section 01 81 36 [O+M Buildings and Facilities Program]-** Delete Paragraph 1.03.A.1 entirely and replace it with the following:

"1. The Contractor shall provide all buildings and facilities required to support efficient and uninterrupted lock operations and to allow for regular operation and maintenance work while ensuring that all the lock operating equipment and controls are adequately protected from the inclemency of the weather. This requirement shall include, as a minimum, the design and construction of



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the following buildings and facilities: a main control building [CB], electrical rooms [ELRs], machinery rooms [MRs], Crossunder elevator rooms [CERs], fire-fighting equipment rooms [FERs], wastewater-treatment plant buildings [WWTPs], a maintenance building [MB], a personnel building [PB], personnel break rooms [PBRs], a spares storage building [SS], a guardhouse [GH], guard booths [GBs], Oil Spill Control Rooms [OSC], Emergency Generator Room [GR], an employee parking lot [PLE] and a visitor parking lot [PLV]. For the space-programming requirements for these buildings and facilities, refer to Section 01 81 36.13 (O & M Buildings and Facilities — Space Programming)."

(Letter GUPC-IAE-1103 and IAE-UPC-0738)

2. **Volume II, Part 2, Section 01 81 36 [O+M Buildings and Facilities Program]-**
Delete Paragraph 1.03.A.3 entirely and replace it with the following:

"3. The Contractor shall provide a lock buildings and facilities master plan for all the maintenance, security, and personnel buildings and facilities required at the Pacific locks and at the Atlantic locks, dependent on the maintenance, security and personnel requirements resulting from the Contractors design and installation of the lock operating equipment and controls."

(Letter GUPC-IAE-1103 and IAE-UPC-0738)

3. **Volume II, Part 2, Section 01 81 36 [O+M Buildings and Facilities Program] –**
Delete the Table at the end of Paragraph 1.03.B.1 and replace it with the following:

Each Lock Complex

Buildings, Rooms, or Areas		Name	Building Abbreviation	Classification O = Occupied U = Unoccupied R = Restricted Po = Personnel only	Location		Service Requirement A = Allow Maintenance	Minimu m Capacity
Qty	Type No.				I- Side	C- Side		
1 each	1.	Main control building	[CB]	O, R		x	24-hr operation	6
As required	2.	Electrical room	[ELR]	U, R	x		A	
As required	2.	Electrical room	[ELR]	U, R		x	A	
As required	3.	Machinery room — gates	[MR-G]	U, R	x		A	
As required	3.	Machinery room — WSB	[MR - WSB]	U, R		x	A	
As required	3.	Machinery room — valves	[MR-V]	U, R	x		A	
As required	3.	Machinery room — valves	[MR-V]	U, R		x	A	
As required	4.	Fire-fighting monitor tower	FFE	U, R	x		A	

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Buildings, Rooms, or Areas		Name	Building Abbreviation	Classification 0 = Occupied U= Unoccupied R= Restricted Po=Personnel only	Location		Service Requirement A = Allow Maintenance	Minimum Capacity
Qty	Type No.				I- Side	C- Side		
As required	4.	Fire-fighting monitor tower	FFE	U, R		x	A	
As required	4.	Fire-fighting equipment room	[FER]	U, R	x		A	
As required	4.	Fire-fighting equipment room	[FER]	U, R		x	A	
6 each	5.	Crossunder elevator rooms	[CER1] to [CER6]	Outdoor, R	x	x	24-hr operation	
1 Ea	6.	Wastewater treatment plant	[WWTP1]	U, R	x		24-hr operation	
1 Ea	6.	Wastewater treatment plant	[WWTP2]	U, R		x	24-hr operation	
1 each	7.	Maintenance building	[MB]	O, R	x			8
1 each	8.	Lock personnel building	[PB]	O, Po		x	24-hr operation	40
As required	9.	Personnel break room	[PBR]	O, Po	x		24-hr Operation	8
As required	9.	Personnel break room	[PBR]	O, Po		x	24-hr operation	8
1 each	10.	Spares storage building	[SS]	U, R	x		A	
1 each	11.	Guardhouse	[GH]	O, Po		x	24-hr operation	2
As required	12.	Guard booth	[GB1]	O, Po	x		24-hr operation	1
As required	12.	Guard booth	[GB2]	O, Po		x	24-Hr Operation	1
1 each	13.	Employee parking lot	[PLE]	Outdoor, Po		x	24-hr operation	60 vehicles
1 each	14.	Visitor parking lot	[PLV]	Outdoor, public area		x	0900 to 1700 hours, 7 days/week	60 vehicles
2 each	15.	Oil-spill control rooms	[OSC1] [OSC2]	U, R	x		A	
1 each	16.	Generator room	[GR]	U, R		x	A	

(Letter GUPC-IAE-1103 and IAE-UPC-0738)

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4. **Volume II, Part 2, Section 01 81 36.13 [O+M Buildings and Facilities Program-Space Programming]** – Add the new Paragraphs 1.03.N and 1.03.O as follows:

“N. BUILDING – 15: OIL-SPILL CONTROL (EQUIPMENT) ROOMS - [OSC-1] AND [OSC-2]

1. **Location:** At each lock complex, two (2) oil-spill control room [OSC] facilities are required. One building will be located at the upper level, close or adjacent to the spares storage building [SS], and the other at the end of the wall on the lower level. Minimum size shall be 10 m by 12 m. Two (2) ramps are required; one ramp shall access the lake and the other the sea entrance to the locks.
2. **Security:** [OSCs] are buildings classified as Operations zone.
3. **Access:** Provide direct access from the main road to the OSC equipment rooms.
4. **Space Requirements:**

[OSC1] [OSC2]	Activity/Space	Operational/Locational Needs	Notes
2 each	Storage area	For oil spill control equipment. Locate at each end of the locks with access to the Canal waters.	The Employer will provide permanent oil spill control equipment and boats.
2 each	Ceiling rail or beam with pulley or winch	Provide a longitudinal rail or beam in the room ceiling at least 5 m high, capable of supporting at least a 2-ton pulley or winch.	Required to store, handle, and maintain the oil-spill containment and recovery equipment inside the room.
2 each	Boat ramp	Minimum 6 m wide, length as required to access water and launch boats at all tidal and impoundment elevations.	To allow launching and removal of boats into or from the navigational channel.
	Ventilation	For overall space	Provide natural cross ventilation to all areas in addition to mechanical ventilation. Fans may be ceiling- or wall-mounted.
	Lighting and electrical power	For overall space and task areas	Provide daylighting and electric light fixtures and convenience electrical outlets in accordance with Section 26 50 00 (Lighting Systems) and Section 26 20 00 (Electrical Low Voltage Distribution Work).

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[OSC1] [OSC2]	Activity/Space	Operational/Locational Needs	Notes
	Miscellaneous	Provide PASs and telephone outlets.	Locate telephone outlets near room entrances. See Section 27 51 16 (Public Address Systems) for public access systems and Section 27 31 23 (IP-Based Telephone Systems) for telephones.

O. **BUILDING – 16: GENERATOR ROOM [GR]**

1. **Location:** Locate the generator room near the electrical room at the upper level, to reduce the possibility of flooding. Identical for the Atlantic and the Pacific lock complexes.
2. **Security:** [GRs] are buildings classified as secure zones.
3. **Space and Operational Requirements:**

GR	Activity/Space	Operational/Locational Needs	Notes
2 each	Equipment room	Shall accommodate the diesel engine generator set to be provided by the Employer. Space shall be provided for a future second generator.	The Employer will provide diesel engine generator, according to Section 26 32 13.13 (Diesel Engine Driven Generator Sets).
2 each	Containment area	Provide containment with adequate sump and drainage facilities to collect and dispose of diesel spills inside the room.	
	Exterior diesel storage tank area	Located alongside the driveway outside the generator room. Requires lightning protection in accordance with Section 26 41 16 (Lighting Prevention and Dissipation Systems).	Provide above-ground type, mounted on concrete cradles on a concrete containment floor and wall, with floor drainage to a sump to allow rainwater drainage and oil retrieval. For storage tanks, see Section 01 86 13 (Plant — Mechanical Systems and Equipment).
	Access	Each room shall have one main entry/exit door with panic bar for personnel and a roll-up door, facing the driveway.	Shall allow for removal or replacement of equipment or piping, using a forklift or crane. For roll up doors, see Section 01 86 13 (Plant — Mechanical Systems and Equipment).

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GR	Activity/Space	Operational/Locational Needs	Notes
	Ventilation	For overall space. Smoke shall exhaust to the building exterior.	Provide natural cross ventilation (may use concrete masonry unit ventilation blocks) in addition to mechanical ventilation systems according to Section 01 86 13 (Plant — Mechanical Systems and Equipment).
	Lighting and electrical power	For overall space	Provide light fixtures and convenience electrical outlets according to Section 26 50 00 (Lighting Systems), Section 26 20 00 (Electrical Low Voltage Distribution Work), and NFPA 70.
	Access control system	At main entry/exit door	Provide according to Section 28 13 00 (Access Control Systems (ACSs)).
	Intrusion detection system	At wall openings.	Provide according to Section 28 16 00 (Intrusion Detection Systems (IDSs)).
	CCVS camera	Mount at exterior to view the main entrance to the building.	Provide according to Section 28 23 00 (Closed Circuit Video Systems)
	Miscellaneous	Provide PASS and telephone outlets. Provide electrical and fiber-optic cables in cable trays or conduits embedded in the concrete floor. Locate telephone outlets near room entrances.	Provide according to Section 27 51 16 (Public Address Systems) and Section 27 31 23 (IP-Based Telephone Systems).

(Letter GUPC-IAE-1103 and IAE-UPC-0738)

5. **Volume II, Part 2, Section 01 81 36.13 [O+M Buildings and Facilities Program-Space Programming]** – Delete Paragraph 1.04 entirely with no replacement.

(Letter GUPC-IAE-1103 and IAE-UPC-0738)

6. **Volume II, Part 2, Section 26 32 13.13 [Diesel-Engine Driven Generator Sets]** – Delete Paragraph 1.01.B entirely and replace it with the following:

“B. **Scope:** This Section contains the technical specifications for furnishing a complete design for future installation by the Employer of the generator set group at each locks complex. The generator will be installed in a separate building and will feed the electrical distribution system through switchgear located in an electrical room at the upper chamber. All signals necessary for synchronization of the generator to the incoming feeders shall be available at the generator connecting point. The generator power transfer will be done with programming to be retrofitted by the Employer in the incoming switchgear, in accordance to the transfer scheme to be

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supplied by the Contractor as indicated in Section 26 13 00 (Medium Voltage Switchgear), and with the provisions provided by the Contractor in the switchgear for later retrofitting by the Employer of such transfer scheme.

(Letter GUPC-IAE-1103 and IAE-UPC-0738)

7. **Volume II, Part 2, Section 26 33 00 [Direct Current Equipment]** – Delete Paragraph 1.03.A.1.b. entirely and replace it with the following:

“b. For improved ease of maintenance, efficient power distribution throughout the new locks complexes, and to minimize voltage drop, +125 VDC power systems shall be distributed with batteries and battery chargers installed throughout the locks at the locations where the load is concentrated.”

(RFV-047)

8. **Volume II, Part 2, Section 26 33 00 [Direct Current Equipment]** – Delete Paragraph 1.03.A.3.a. entirely and replace it with the following:

“a. +125 VDC systems shall be used for delivering power to the loads from the closest +125 VDC distributed system location.”

(RFV-047)

9. **Volume II, Part 2, Section 26 33 00 [Direct Current Equipment]** – Delete Paragraph 1.03.B.1.e. entirely and replace it with the following:

“e. Battery rooms shall be in the ground floor of each control building and machinery building, and shall have a door connecting to adjacent electrical equipment room. Battery rooms shall be sized as required, with no less than 20 m² in control buildings and 10 m² in machinery buildings. +125 VDC and -48 VDC battery rooms shall be independent.”

(RFV-047)

10. **Volume II, Part 2, Section 26 33 00 [Direct Current Equipment]** – Delete Paragraph 1.03.E.3.b. entirely and replace it with the following:

“b. DC power systems at the control buildings shall have two (2) battery bank sections (as illustrated in Figure No. 26 33 00-5) and two (2) 100% battery chargers, and each battery section shall have at least one half of the required Ah capacity calculated. DC power systems (north and south) at the machinery rooms shall have no less than one (1) battery bank for 100% of the required Ah capacity and two (2) 100% battery chargers.”

(RFV-047)

There is no time or cost impact to the Locks Contract as a consequence of this Variation.


