



## ADDENDUM # 3 OF 3

Project Name: Recapitalization of Water Filtration System in Port au Prince, Haiti  
Project No.: B-PRNCE-107  
Solicitation No.: ARA-CONST-PRNCE-15094  
Date: January 18, 2017

The following supplements and/or supersedes the request for proposals documents issued on December 12, 2016. This addendum forms part of the contract documents and is to be read, interpreted, and coordinated with all other parts. Any change to the cost of the work as a result of this addendum is to be included in the price proposal. The following revisions supersede the information contained in the original Request for Proposals Package for the above-mentioned project to the extent referenced and shall become part thereof.

Further to General Technical Specifications Appendix "B" of the Draft Contract:

1. C.2 Pump systems: Please specify the voltage, phase, and hertz of the electrical supply for the car wash pumping system, raw water pumping system, and distribution pumping system.

*Grundfos pumps are supplied in a wide range of voltage within single and three-phase current. See answer to question 6 for motor selection.*

*Les pompes Grundfos sont disponibles dans une bonne variété de voltages et en courant mono ou triphasé. Se référer à la réponse de la question 6 pour la sélection du moteur.*

2. C.2 Pump systems: PVC is specified for the packaged pump system piping. We recommend 316SS piping, valves and fittings as it is a more robust system and better suited for the extensive shipping and handling that it will undergo. Also, we recommend NPT instead of flanged connections due to the small pipe size. Please advise whether 316SS and NPT joints be acceptable?

*316SS piping is acceptable. NPT connections are acceptable only for valves and accessories on each pump suction and discharge if 316SS piping is used; flanged connections must remain for inlet and outlet manifolds of the skids.*

*La tuyauterie en A1316 est acceptable. Les connexions NPT sont acceptables seulement pour les valves et les accessoires à la succion et au refoulement de chacune des pompes si de la tuyauterie en A1316 est retenue; les raccords bridés doivent être conservés pour les conduites collectrices d'entrée et de sortie des bases préassemblés.*

3. C.2.1 Car wash pumps, Raw water pumps: A pressure tank of 316SS is specified. Will 304SS or composite (fibreglass) be acceptable for these pressure tanks? We are not aware of any production NSF61 certified 316SS pressure tanks in this size.

*Pressure tank in 304SS, composite or epoxy coated steel are acceptable but pay particular attention to the space available and the dimensions of the tank.*

*Un réservoir hydro-pneumatique en A1304, en composite ou en acier recouvert d'époxy sont acceptables, mais une attention particulière doit être portée à l'espace disponible et aux dimensions du réservoir.*

4. C.2.1 Car Wash Pumps and Raw Water Pumps, C2.2.2 Distribution Pumps: Will you accept a Goulds eSV Series Vertical Multistage Pump as an equivalent to the specified Grundfos CRI pumps? The Goulds eSV

Series and Grundfos CR Series are widely accepted in the industry as being equivalent and best in class. The Goulds eSV pumps are NSF61 certified and have excellent efficiencies and reliability.

Car Wash Pump: Goulds 1SV8 with 1HP motor as an equivalent to the Grundfos CRI 1-10 with 1.5HP motor

Raw Water Pump: Goulds 1SV7 with 1HP motor as an equivalent to the Grundfos CRI 1-8 with 1.0HP motor

Distribution Pump: Goulds 5SV7 with 3HP motor as an equivalent to the Grundfos CRI 5-9 with 3HP motor

The Goulds pumps are selected for the specified performance requirements. The associated motors are fully non-overloading across the pump curve.

*Proponents must prepare their Proposal considering equipment in the specifications. Requests for equivalences will be processed in shop drawings. If the material of the proposed pumps is equivalent (stainless steel) and they provide the expected performance, they should be accepted.*

*La soumission doit être préparée en considérant les équipements spécifiés au devis. Les demandes d'équivalences seront traitées en dessins d'atelier. Si le matériau des pompes proposées est équivalent (acier inoxydable) et qu'elles fournissent les performances attendues, elles devraient être acceptées.*

5. Please provide us with the voltage and phase provide at the electrical panels.

*480 V, 3 ph., 60 Hz*

6. How much water will be available, total (in GPM), for the backwashing sediment filters? In order to backwash a 24" filter tank AND provide no less than 10GPM to service, we would need to have access to approx 50USGPM. We would need to make sure the pumping system can supply at least this amount.

*System is designed to supply 31usgpm for filters backwash and fast rinse. The electronic timer can be set to backwash filters during the night and both distribution pumps are allowed to operate simultaneously if required.*

*Le système est conçu pour fournir 31GUSPM pour le rétro lavage et le rinçage rapide des filtres. La minuterie électronique pourra être ajustée pour laver les filtres durant la nuit et les deux pompes de distribution peuvent fonctionner simultanément.*

7. For all of the backwashing water treatment devices, I will be proposing the use of a 2" brass control valve. The Fleck 2900S valve has an optional, built-in, feature that would allow us to "easily" allow for a separate source (or treated water) for the backwash cycles. The use of the separate source backwash feature on this control may allow us to eliminate the use of the (2) motorized ball valves to control the treated water backwash supply for each of the sets of units.

*Requests for equivalences will be processed in shop drawings. The Contractor will be responsible of all proposed equivalence and must ensure compliance to the expected functioning of the system. Without prejudice, the proposed valves appear to be acceptable.*

*Les demandes d'équivalences seront traitées en dessins d'atelier. L'Entrepreneur sera responsable des équivalences proposées et devra s'assurer de respecter le fonctionnement prévu du système. Sous toutes réserves, les valves proposées semblent acceptables.*

8. A 24” diameter tank on a backwashing “Anthracite & Sand” filter will typically require 38 to 40USGPM (not 31GPM as in the spec) for the backwash and fast-rinse cycles. Would it be possible to provide the engineering information, that the application of this system is based on, (or at least the brand/make or model) for the unit in the spec. I am assuming that “sand & anthracite” filter, could also be called (as I know it) a “Multi-Media” filter (as in the drawing) that would also include two grades of garnet and gravel support media? I am not aware of a filter that is just “sand & anthracite”. The frequency of the backwash cycles will occur as programmed or as necessitated by the application.

9. I will require more information as to the type (or grade) of Anion resin used in the Anion Ion Exchanger. There are several types available, I could choose to go with the Purolite A860 or the Tanex resin; here again, any engineering information (the brand/make or model) for the anion unit would be appreciated. As well as any water quality information (water testing results as it pertains to organics). Also, here, a 14” diameter tank was specified for use in this application, this tank size will typically require 4 to 5USGPM (not 3GPM as in the spec) for the backwash and fast-rinse cycles. The frequency of the backwash cycles will occur as programmed or as required by the application. I do understand that the use of an anion resin will reduce the backwash flow rate required, however, without knowing which exchange resin we would be using, I cannot be certain of the backwash flow rate required for this particular application.

10. For the Cation Ion Exchanger, here again, any engineering information (the brand/make or model) for this unit, as found in the spec, would be appreciated. As well as any water quality information (water testing results as it pertains to cations; hardness, iron, manganese, T.D.S., etc). Also, here, an 18” diameter tank was specified for use in this application, this tank size will typically require 10USGPM (not 7GPM as in the spec) for the backwash and fast-rinse cycles. The frequency of the backwash cycles will occur as programmed or as required by the application. As well, the unit would be supplied with Cation exchange resin (not Anion).

*Answer to questions 9 to 11: This water processing system is based on Magnor equipment (Contact: Guy-Olivier Carrier, +1 450 655-1711)*

- *Filters model FAAS 2472-2850NXT which include anthracite, filter sand and support medias according to the quantities indicated in specifications.*
- *Anion exchanger model EA084-2900-3200NXT using Purolite A860 resin.*
- *Cation exchanger model EA140-2900-3200NXT using Purolite C100E.*

*For all subsystems, frequency of backwash or regeneration will be initially set at the value in specifications and will be adjusted according to observed fouling and raw water quality. Raw water is carried in by tank truck and its quality is unknown.*

*Réponse aux questions 9 à 11 : Cette filière de traitement d'eau est basée sur les équipements de Magnor (Contact : Guy Olivier Carrier, +1 450 655-1711)*

- *Filtres modèle FAAS 2472-2850NXT qui inclut de l'anthracite, du sable filtrant et des médias de support selon les quantités indiquées au devis.*
- *Échangeur anionique modèle EA084-2900-3200NXT utilisant la résine Purolite A860.*
- *Échangeur cationique modèle EA140-2900-3200NXT utilisant la résine Purolite C100E.*

*Pour tous les sous-systèmes, la fréquence des lavages ou régénérations sera initialement ajustée selon les fréquences au devis et seront ensuite modifiées selon le taux d'encrassement observé et la qualité d'eau brute. L'eau brute arrive par camion-citerne et sa qualité est inconnue.*

11. For the UV system, the PRO10 units are rated for 10GPM at 40mj/cm<sup>2</sup>, not 80mj/cm<sup>2</sup>. Even with a reduced flow rate through the unit, I would not be able to provide any type of certification of UV system performance beyond the manufacturers ratings. As well, we do not have any of the water quality information as it pertains to U.V. Transmissivity.

*By reducing the flow of 50%, the radiation dose will be doubled. This design approach is currently used for small systems. We know that sterilizers are certified for a dose of 40mJ/cm<sup>2</sup> and that is why a flow restrictor is asked.*

*En réduisant le débit de 50%, la dose sera doublée. Cette approche de conception est actuellement utilisée pour les petits systèmes. Nous savons que les stérilisateurs sont certifiés pour une dose de 40mJ/cm<sup>2</sup> et c'est pourquoi un restricteur de débit est demandé.*

12. Paragraph 3.9 of the Special Technical Clauses, only one manufacturer is cited for the main elements. Are we allowed to propose an equivalent?

Equivalent products will be considered as long as the quality, performance and flexibility of operation is equivalent or better than the one identified in para 3.9 of the Special Technical Clauses. It is also the responsibility of the Proponent to ensure that the proposed equivalent fits the location and equipment and meets the specifications.

Le produit équivalent sera considéré tant que la qualité, la performance et la souplesse de fonctionnement seront équivalentes ou supérieures à celles indiquées au paragraphe 3.9 des clauses techniques spéciales. Il incombe également au soumissionnaire de s'assurer que l'équivalent proposé correspond à l'emplacement et à l'équipement et satisfait aux spécifications.

**End of Addendum #03**