

# NIAGARA FALLS WATER BOARD

## REQUEST FOR BIDS BID #W2-10

Bids on items as specified herein will be accepted at City Hall until 11:00 A.M., and opened at 11:00 A.M. on January 14, 2010.

Bidders must state when delivery can be made.

All bids are subject to delivery as stated herein.

If a bid is submitted on an article intended as a substitute for a grade or brand specified, the bidder must state the grade or brand of the substitution, otherwise it will be assumed that the bid is based on the grade or brand specified.

The Board reserves the right to accept this bid by items, or as a whole, or to reject any or all bids or waive informalities.

Bids are to be shown NET. Cash discounts are to be stated, if any.

All bids must be accompanied by the requisite bid bond IF SO STATED IN THE SPECIFICATIONS.

Provision of any required performance bond is the responsibility of the bidder.

Prices must be filled in with typewriter or ink on this form.

**THE ENVELOPE CONTAINING THE BID MUST BE SEALED AND CLEARLY MARKED WITH THE BID NUMBER.**

Any and all bids and contracts made or awarded by the Niagara Falls Water Board or any official thereof for work or services performed or to be performed, or goods purchased or sold or to be purchased or sold are made subject to the provisions of Chapter 861 of the Laws of New York, 1953, as amended by Chapter 751 of the Laws of New York, and as now contained or as may hereafter be amended. The provisions of the New York State General Municipal Law and 103a and 103b are applicable to this bid.

**BIDDER'S ATTENTION IS REQUESTED REGARDING THE FOLLOWING CONDITIONS AND REGULATIONS. BIDS NOT IN COMPLIANCE WITH THE FOREGOING CONDITIONS AND REGULATIONS WILL NOT BE CONSIDERED.**

### **NON-COLLUSIVE BIDDING CERTIFICATION (PURSUANT TO CHAPTER 751 OF LAWS OF NEW YORK, 1965)**

By submission of this bid or proposal, the bidder certifies that:

- a) This bid or proposal has been independently arrived at without collusion with any other bidder or with any competitor or potential competitor;
- b) This bid or proposal has not been knowingly disclosed and will not be knowingly disclosed, prior to the opening of bids or proposals for this project, to any other bidder, competitor or potential competitor;
- c) No attempt has been or will be made to induce any other person, partnership or corporation to submit or not to submit a bid or proposal;
- d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidders as well as to the person signing on it's behalf;
- e) That attached hereto (if a corporate bidder) is a certified copy or resolution authorizing the execution of this certificate by the signature of this bid or proposal on behalf of the corporate bidder.

(see reverse side for additional information)

**COMPANY NAME:**

\_\_\_\_\_  
\_\_\_\_\_

**ADDRESS:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<b>TOTAL NET PRICE</b>	<b>DELIVERY PROMISED</b>
<b>CONTACT PERSON FOR QUESTIONS REGARDING BID</b>	<b>TELEPHONE NUMBER</b>
<b>AUTHORIZED SIGNATURE</b>	<b>DATE</b>

**TITLE**

**MAIL BIDS TO:**  
NIAGARA FALLS WATER BOARD  
C/O PURCHASING DIVISION ROOM 14-B  
PO BOX 69  
NIAGARA FALLS, NY 14302-0069

**DELIVER BIDS TO:**  
NIAGARA FALLS WATER BOARD  
C/O CITY HALL ROOM 14-B  
745 MAIN STREET  
NIAGARA FALLS, NY 14302-0069

**BIDS SUBMITTED BY FACSIMILE ARE UNACCEPTABLE**



QNTY	UNIT	DESCRIPTION	UNIT PRICE		NET TOTAL
		Sealed bid proposals will be received by the City			
		Purchasing Agent in his office at City Hall for the			
		purchase of the following:			
125	TONS	More or less, virgin granular activated carbon, for the			
		Niagara Falls Water Board per the attached specifications:			
		Standard make-up grade:			
		Inventory renewal grade:			
		Recycled, reactivated:			
		a 10 pound minimum sample must be submitted to the			
		City by the date and time of the bid opening. The sample			
		may be included with the bid or the sample may be sent			
		directly to the Wastewater Treatment Plant to the			
		attention of Julie Hoy.			
		All bid prices are to be firm through December 31, 2010.			
		If mutually agreeable, the bid may be extended one			
		additional year, under the same terms, conditions and			
		specifications through December 31, 2011.			
		Deliveries are to be made within ten (10) calendar days			
		after receipt of the order Monday through Friday			
		unless otherwise directed.			
		The successful bidder(s) must submit a certificate of			
		insurance which meets all the requirements as outlined in			
		the attached "Instructions for Niagara Falls Water Board			
		Standard Insurance Certificate". Failure to do so will			
		cause termination of the contract.			
		Do not submit a certificate with your bid. You will be			
		contacted if one is required.			



**NIAGARA FALLS PUBLIC WATER AUTHORITY  
BID SPECIFICATIONS**

**VIRGIN GRANULAR ACTIVATED CARBON PURCHASE**

**1. Bidding Requirements**

Bid price is to be F.O.B. Destination, freight prepaid to:

Niagara Falls Water Board  
Wastewater Treatment Plant  
1200 Buffalo Avenue  
Niagara Falls, New York 14303

Bids are to be accompanied by a sealed, 10 pound (minimum) container of the candidate virgin granular activated carbon (GAC) bid. The sample will undergo testing by the treatment plant's laboratory to determine specification conformance.

Bids are also to be accompanied by a list of no less than four references, comprised of wastewater and/or water treatment facilities currently using the carbon being bid. The facilities may be municipal or industrial in nature. References shall be provided on the attached forms, which must be completed in full.

**2. Virgin Carbon Quality**

All virgin GAC supplied under this procurement shall be manufactured from select grades of bituminous coals, crushed and reagglomerated to produce the desired performance characteristics. The GAC shall be supplied from a single factory to ensure consistent quality and contain no soluble inorganic material or organic substances capable of producing deleterious effects. Information on the production facility (name, location, years of operation, annual production and ISO certification) supplying GAC under this bid shall be provided at the time of bidding. The facility shall have a minimum of 10 years experience in supplying GAC to treatment facilities. The carbon shall meet or exceed the following standards:

<b><u>Carbon Quality Parameter</u></b>	<b><u>Standard Make-up Grade Carbon</u></b>	<b><u>Inventory Renewal Grade Carbon</u></b>	<b><u>Recycled Reactivated Carbon</u></b>
Iodine Number, mg/g	900 (min)	920 (min)	750 (min)
Apparent Density (dry)	0.55 (max)	0.63 (max)	0.53 (max)
Percent Ash	11% (max)	11% (max)	----
Percent Moisture (by wt.)	2% (max)	2% max)	2% (max)
Abrasion Number	75 (min)	80 (min)	70 (min)
Uniformity Coefficient	2.1 (max)	1.5 (max)	---
Sieve Analysis:			
Smaller than #30	4%	---	4% (max)
Smaller than #20	---	5% (max)	---
Larger than #8	15% (max)	15% (max)	15% (max)

The Water Board intends to purchase varying quantities of each carbon grade, standard make-up and inventory renewal, depending upon system demands and bid prices.

The contractor shall submit an analysis for these parameters with each truckload delivered. This analysis shall be performed by a laboratory certified to do such analysis. These analysis shall be performed at no additional cost to the Water Board. The contractor shall not interfere with the Water Board or the Water Board's designated representative in collecting any additional carbon samples for supplemental analysis.

Measurement and testing procedures shall be as specified in accordance with the latest edition of the following references or sources:

Standard Methods for the Examination of Water and Wastewater  
ANSI/NSF Standard 61  
AWWA Standard B604  
American Society for Testing and Materials Volume 15.01

Also attached is a copy of the wastewater treatment plant's laboratory procedure WWPC-9 for determining iodine number. This procedure shall be used to verify the iodine number of candidate carbon, within a three percent margin of error.

**3. Virgin Carbon Delivery**

The frequency of truckload deliveries will depend on the quantity delivered per truckload and the rate of regeneration/transport. Typically, one regeneration cycle is performed per calendar year, and lasts approximately 90 days. The number of cycles per year and individual cycle duration remain subject to change. The relative quantities of standard make-up carbon and inventory renewal carbon are also subject to change. Tanks shall be used to transport GAC to the treatment facility. The contractor is responsible for the proper preparation and offloading of carbon into the Wastewater Treatment Plant's storage tank. Damage or floating carbon shall be removed and replaced at the contractor's expense.

**4. Use of Facilities and Utilities**

The contractor shall be responsible for supplying eductors, booster pumps, hose and any other equipment of materials necessary to off-load carbon into the Water Board's storage tanks or carbon filter beds. The Water Board will allow reasonable access to plant water/hydrant connections and will operate in-plant carbon transfer systems. The Water Board will allow reasonable access to plant electricity as well. All labor, equipment and appurtenances necessary for the contractor to gain access to site utilities shall be provided by the contractor at no additional expense to the Water Board. The contractor, in gaining access to any site utility, shall not adversely affect any process or other activity required by the Water Board to perform any of the Water Board's routine or planned activities.

**5. Measurement and Payment**

The contractor shall include in his bid price, the cost of all labor, materials, equipment and appurtenances to perform the work, including the transport of carbon and unloading at the Water Board's facilities. The contractor shall also be responsible for the removal of unacceptable (off spec) GAC from the Water Board's storage tanks.

Payments for virgin GAC delivered and accepted shall be made monthly. Measurement of all carbon quantities for payment shall be on a per pound, dry weight basis. There shall be a weight ticket of the empty truck and trailer (tare weight) and a weight ticket of the truck and trailer loaded with virgin GAC. Net weight is the difference between the two. The net weight shall be corrected for moisture content as determined by representative sampling of each truck load and subsequent analysis for moisture as given by AWWA Standard B604. The dry weight of carbon will be the basis for payment. All billings shall be priced and rounded to the nearest pound of carbon.

The contractor shall be responsible for supplying all certified truck load weights and for the laboratory testing required to determine dry weights of virgin GAC. Each shipment shall be sampled by the contractor and divided into three equal portions. One portion is to be analyzed by the contractor, one portion is to be submitted to the Water Board, and the third portion is to be retained by the contractor for submission to a referee laboratory, if required.

The Water Board reserves the right, at the Water Board's expense, to require all or any fewer number of carbon shipments to be independently weighed in and out at a local certified truck weighing facility. The Water Board also reserves the right to sample and test each shipment for carbon quality parameters.

**6. Alternate Carbon Purchase**

The Water Board reserves the right to secure GAC from other public utilities or agencies as circumstances permit.

**7. Facility GAC Analysis & Report**

The successful bidder shall provide the following services during each regeneration cycle:

- A. Analyze up to 5 (five) samples of "spent" activated carbon for iodine Number, Apparent Density, Abrasion Number and Particle Size Distribution.
- B. Analyze up to 5 (five) samples of regenerated carbon for Iodine Number, Apparent Density, Abrasion Number and Particle Size Distribution.
- C. Based upon the analysis of spent and regenerated carbon, advise the facility through a written report of potential problems which could influence regenerated product quality and overall performance of the physical-chemical treatment system.

**8 Onsite Training**

As an integral part of this procurement, the contractor shall provide up to one (1) full day of onsite training for the wastewater treatment plant employees. This training shall be provided at no additional cost to the Water Board. The training shall describe various aspects of GAC adsorption and regeneration as applicable to the Water Board's use of GAC; it shall include theory, practical operational guidance, and opportunities for questions and answers. Written instructional materials shall be provided to each attendee. The Water Board may, at its option, also invite a limited number of staff from the North Tonawanda Wastewater Treatment Plant (another physical-chemical activated carbon treatment plant) to attend. The contractor is responsible for preparing a syllabus

and submitting it to the New York State Department of Environmental Conservation for approval for operation certification contact hours.

**9. Onsite Services**

The successful bidder shall provide qualified personnel to inspect the regeneration furnace and review all operation and maintenance procedures once during the calendar year. This review shall include startup, operation, shutdown, and offline in section procedures so that comments and suggestions for improvements may be developed and provided to the treatment facility staff.



**NIAGARA FALLS WATER BOARD**  
**VIRGIN GRANULAR ACTIVATED CARBON PURCHASE**

**TREATMENT FACILITY REFERENCE FORM**

1. NAME OF FACILITY	
2. LOCATION	
3. TYPE OF APPLICATION	
4. MUNICIPAL OR INDUSTRIAL	
5. CONTACT NAME	
6. CONTACT TITLE	
7. CONTACT TELEPHONE NUMBER	
8. CARBON PRODUCT CURRENTLY IN USE	
9. DATE(S) OF MOST RECENT DELIVERY & QUANTITY	

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## NIAGARA FALLS WASTEWATER FACILITIES

Laboratory Procedure No.: WWPC-9  
Title: Granular Activated Carbon

9.7 IODINE NUMBER

Discussion: The iodine number is defined as the milligrams of iodine adsorbed by one gram of carbon when the iodine concentration of the residual filtrate is 0.02 normal. This test provides a measure of the adsorptive capacity of the carbon.

Sample Preparation: Grind a sample of dry carbon to 324 mesh using a SPEX 8000 mixer/mill or similar. Three (3) 0.52 inch steel projection balls (25g) are used to promote grinding. Place the pulverized sample in a glass Petri dish and write the sample identification on the dish.

REAGENTS:

1. Hydrochloric Acid, 5% wt.: Add 70 ml of reagent grade concentrated hydrochloric acid to 550 ml of distilled water.
2. Sodium Thiosulfate, 0.1 N: Dilute the "certified" commercial concentrate in accordance with instructions on the ampule.
3. Iodine Solution, 0.1 N: Weigh 12.700g of resublimed iodine crystals and 19.100g of potassium iodide (KI) into a beaker.  
NOTE: The potassium iodide to iodine ratio MUST be 1.5 to 1.  
Add small increments of distilled water while stirring until the volume is 50 to 60 ml. Allow solution to stand a minimum of 4 hours to ensure crystals are thoroughly dissolved. Occasional stirring will aid in dissolution. Quantitatively transfer to a one liter volumetric flask and fill to the mark with distilled water. Mix thoroughly. Standardize the solution using a "certified" 0.1000N sodium thiosulfate solution.
4. Starch Indicator Solution: Transfer 2.5 grams of soluble starch to a mortar and add a little cold water. Grind to a thin paste and pour into one liter of boiled distilled water. Stir and then allow to settle. Use the clear supernate.

PROCEDURE:

1. Mix the pulverized carbon sample in the Petri dish using a small spatula. Using the analytical balance, weigh out an amount of carbon as indicated below:

Virgin C: 1.000 – 1.100 g

Regenerated C: 1.500 – 1.700 g

Spent C: 2.000 – 2.500 g

Record the total weight of carbon and weighing paper, to the nearest 0.1 mg, in the notebook. Transfer the carbon to a 250 ml Erlenmeyer of iodine flask. Reweigh the paper and subtract the tare weight from the total weight to obtain the weight of sample used.

2. Add a few glass boiling beads to the flask. Add 10 ml of 5% HCl (1) and place the flask on a hot plate. Bring the contents to a boil and allow to boil for 30 seconds.
3. Remove the flask from the hotplate and cool to room temperature. This can be accelerated by placing the flask in a cold water bath.
4. Using a volumetric pipet, add 100 ml of 0.1 N iodine (3) to the flask. Immediately stopper the flask and shake vigorously for 30 seconds. Remove the stopper and filter by gravity through Whatman 2V filter paper. Discard the first 25 ml of filtrate and collect the remainder in a clean beaker. Do not wash the residue on the filter paper.
5. Mix the filtrate in the beaker with a stirring rod and pipet 50.0 ml of the filtrate into a 250 ml Erlenmeyer flask. Titrate with 0.1 N Sodium Thiosulfate (2) until the yellow color has almost disappeared. Add about 1 ml of starch indicator (4) and continue titration until the blue color just disappears. Record the volume of Sodium Thiosulfate Solution used.
6. Calculate the residual filtrate normality (C) using the formula:

$$C = \frac{N_2 \times E}{50}$$

where E = ml of sodium thiosulfate used.

N<sub>2</sub> = normality of standard thiosulfate solution

If it is not within the range of 0.008 – 0.035, repeat the test using a different weight of sample. A residual filtrate normality greater than 0.035 indicates the carbon is not removing a sufficient amount of iodine. In this case, use a greater weight of sample. Obtain correction factor (d) from Table b-1 based on calculation of residual filtrate normality (C).

7. CALCULATIONS:

$N_1$  = Normality of standard iodine solution

$N_2$  = Normality of standard sodium thiosulfate solution

$A$  =  $N_1 \times 12693$

$B$  =  $N_2 \times 126.93$

$V$  = Volume of  $\text{Na}_2\text{S}_2\text{O}_3$  used for sample

$C$  = Filtrate normality =  $\frac{V \times N_2}{50.0}$

$\frac{x}{m}$  =  $\frac{A - (2.2 B \times V)}{\text{Sple. wt. (grams)}}$

$D$  = Correction factor (from graph)

Iodine Number =  $\frac{x}{m} \times D$  (mg/g)

8. REFERENCES:

US EPA Process Design Manual for Carbon Adsorption  
EPA 625/1-71-002a October 1973

Calgon Carbon Corporation: Determination of the Iodine Number of Activated Carbon TM-4

ASTMD - 4607 Volume 15.01, 1989

TABLE B-1  
IODINE CORRECTION FACTOR (D)

RESIDUAL FILTRATE NORMALITY (C)	.0000	.0001	.0002	.0003	.0004	.0005	.0006	.0007	.0008	.0009
.0080	1.1625	1.1613	1.1600	1.1575	1.1550	1.1538	1.1513	1.1500	1.1475	1.1463
.0090	1.1438	1.1425	1.1400	1.1375	1.1363	1.1350	1.1325	1.1300	1.1288	1.1275
.0100	1.1250	1.1238	1.1225	1.1213	1.1200	1.1175	1.1163	1.1150	1.1138	1.1113
.0110	1.1100	1.1088	1.1075	1.1063	1.1038	1.1025	1.1000	1.0988	1.0975	1.0963
.0120	1.0950	1.0938	1.0925	1.0900	1.0888	1.0875	1.0863	1.0850	1.0838	1.0825
.0130	1.0800	1.0788	1.0775	1.0763	1.0750	1.0738	1.0725	1.0713	1.0700	1.0688
.0140	1.0675	1.0663	1.0650	1.0625	1.0613	1.0600	1.0588	1.0575	1.0563	1.0550
.0150	1.0538	1.0525	1.0513	1.0500	1.0488	1.0475	1.0463	1.0450	1.0438	1.0425
.0160	1.0413	1.0400	1.0388	1.0375	1.0375	1.0363	1.0350	1.0333	1.0325	1.0313
.0170	1.0300	1.0288	1.0275	1.0263	1.0250	1.0245	1.0238	1.0225	1.0208	1.0200
.0180	1.0200	1.0188	1.0175	1.0163	1.0150	1.0144	1.0138	1.0125	1.0125	1.0113
.0190	1.0100	1.0088	1.0075	1.0075	1.0063	1.0050	1.0050	1.0038	1.0025	1.0025
.0200	1.0013	1.0000	1.0000	.99988	0.9975	0.9975	0.9963	0.9950	0.9950	0.9938
.0210	0.9938	0.9925	0.9925	0.9913	0.9900	0.9900	0.9888	0.9875	0.9875	0.9863
.0220	0.9863	0.9850	0.9850	0.9838	0.9825	0.9825	0.9813	0.9813	0.9800	0.9788
.0230	0.9788	0.9775	0.9775	0.9763	0.9763	0.9750	0.9750	0.9738	0.9738	0.9725
.0240	0.9725	0.9708	0.9700	0.9700	0.9688	0.9688	0.9675	0.9675	0.9663	0.9663
.0250	0.9650	0.9650	0.9638	0.9638	0.9625	0.9625	0.9613	0.9613	0.9606	0.9600
.0260	0.9600	0.9588	0.9588	0.9575	0.9575	0.9563	0.9563	0.9550	0.9550	0.9538
.0270	0.9538	0.9525	0.9525	0.9519	0.9513	0.9513	0.9506	0.9500	0.9500	0.9488
.0280	0.9488	0.9475	0.9475	0.9463	0.9463	0.9463	0.9450	0.9450	0.9438	0.9438
.0290	0.9425	0.9425	0.9425	0.9413	0.9413	0.9400	0.9400	0.9394	0.9388	0.9388
.0300	0.9375	0.9375	0.9375	0.9363	0.9363	0.9363	0.9363	0.9350	0.9350	0.9346
.0310	0.9333	0.9333	0.9325	0.9325	0.9325	0.9319	0.9313	0.9313	0.9300	0.9300
.0320	0.9300	0.9294	0.9288	0.9288	0.9280	0.9275	0.9275	0.9275	0.9270	0.9270
.0330	0.9263	0.9263	0.9257	0.9250	0.9250					

## NIAGARA FALLS WATER BOARD

**INSURANCE:** Standard Insurance Requirements apply to the following classifications:

- Construction and Maintenance
- Purchase of, or lease of merchandise or equipment
- Professional Services
- Property Leased to others or Use of Facilities or grounds
- Concessionaire Services
- Livery Services
- All purpose Public Entity Contracts

The Provider of any of the above classifications shall obtain, at his own costs and expense, the following insurance coverage with insurance companies licensed in the State of New York with a Best Rating of at least A- and shall provide a Certificate of Insurance and binder of Insurance Coverage, or a Certificate of Insurance and Policy Endorsement as evidence of such coverage to the Niagara Falls Water Board before commencement of work and/or lease or delivery of merchandise or equipment.

Certificates should be made to the Niagara Falls Water Board, 5815 Buffalo Avenue, Niagara Falls, N.Y. and should reference the project.

Prior to non-renewal, cancellation of insurance policies, or material change, at least 30 days advance written notice shall be given to the Certificate Holder and Binder Holder.

All Certificates of Insurance, Binders of Insurance Coverage, and Endorsements shall be approved prior to the inception of any work.

Minimum coverage with limits and provisions are as follows:

A. **Comprehensive General Liability**

With a minimum combined single limit of liability for Bodily Injury and Property Damage of \$1,500,000 per occurrence and 3,000,000 annual aggregate. The coverage shall include:

- Premises and Operations
- Products and Completed Operations
- No exclusion for X C U coverages (explosion, collapse and underground)
- Independent Contractors
- Broad Form Property Damage
- Contractual Liability
- Fire Legal Liability
- Personal Injury Liability (Coverage A, B and C)
- Liquor Liability (if alcoholic beverages are to be dispensed under NYS License)

The Niagara Falls Water Board, the Niagara Falls Public Water Authority and the City of Niagara Falls shall be named as an Additional Insureds on the General Liability Policy with the following provisions:

1. The insurance company or companies issuing the policies shall have no recourse against the Niagara Falls Water Board or the Niagara Falls Public Water Authority for payment of any premiums or for assessments under any form of policy.

2. The insurance shall apply separately to each insured (except with respect to the limit of liability).

B. **Auto Liability:** (if licensed vehicles are to be used in the operation)

With a combined single limit for Bodily Injury and Property Damage of \$1,000,000 each occurrence, the coverage shall include Owned, Hired and Non-owned autos (Symbol 1 should be designed for Liability Coverage on Business Auto Policy).

C. **Excess Umbrella Liability:**

If General Liability and/or limits are lower than required in the above sections, Umbrella Liability or Excess Liability to the required limit is acceptable.

D. **Owners Protective Liability:** (on contracts for construction which exceed a cost of \$100,000).

With a minimum limit of \$1,500,000 each occurrence and 3,000,000 aggregate. Named insured shall be the Niagara Falls Water Board and the Niagara Falls Public Water Authority.

E. **Professional Liability:**

If the contract includes professional services (engineers, architects, etc.), contractor will carry professional liability insurance with a minimum limit of one million dollars (\$1,000,000).

F. **Property Insurance:** (if applicable)

Contractor shall purchase and maintain property insurance upon the work at or off the site to 100% of the contract completed value. This insurance shall include the interest of the Owner, Contractor and Subcontractors in the work; shall insure against the perils of fire and extended coverage; shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage. All such insurance required by this paragraph shall remain in effect until the work is completed and accepted by the Owner.

G. **Statutory Workers' Compensation and Employers Liability:**

All contractors doing business with or vendors entering upon Niagara Falls Water Board property shall carry the above insurance, in compliance with the Workers' Compensation Law of the State of New York.

H. **Performance and Payment Bond: (where applicable)**

A performance and payment bond shall be issued by a Surety company who is licensed by the Insurance Department of the State of New York in favor of the Niagara Falls Water Board in the amount of not less than (100) percentum of the total amount and shall be delivered before commencement of lease or assumption of operations under contract.

