

TOWN OF SIMSBURY

**WATER POLLUTION CONTROL
36 DRAKE HILL ROAD
SIMSBURY, CT 06070**

INVITATION TO BID

FOR

**MECHANICALLY CLEANED BAR SCREEN
WATER POLLUTION CONTROL FACILITY, SIMSBURY**

The Town of Simsbury, Water Pollution Control is soliciting bids for a mechanically cleaned bar screen for the influent channel at the Water Pollution Control Facility in the Town of Simsbury. The scope of work is to include furnishing all labor, materials, equipment necessary for the work as specified.

Sealed proposals will be accepted by Joe Mancini, Director of Finance, 933 Hopmeadow Street (Rt. 10/202), Simsbury, CT until 10:00 a.m., Thursday, July 24, 2014.

Specifications and bidding documents may be obtained electronically via the Town's web site at the following link: www.simsbury-ct.gov/finance/pages/public-bids-and-rfp. Bid documents will not be mailed or faxed.

**STANDARD INSTRUCTIONS TO BIDDERS
MECHANICALLY CLEANED BAR SCREEN
WATER POLLUTION CONTROL FACILITY, SIMSBURY**

1. Project Overview:

The Town of Simsbury is soliciting bids for mechanically cleaned bar screen for the influent channel at the Water Pollution Control Facility.

The scope of work for this project includes furnishing all labor, materials and equipment required to provide the equipment to the Town as specified.

2. Key Event Dates:

Invitation to Bid Issued	6/20/14
Mandatory Site Visit	6/26/14 at 10:00 am or 7/10/14 at 10:00 am
Bid Opening	7/24/14

3. Bid Submission Instructions:

- A. One (1) original and one (1) copy of all bids must be submitted in a sealed envelope with the bidder's name on the outside of the envelope and clearly marked "Mechanically Cleaned Bar Screen for Water Pollution Control". If forwarded by mail or courier, the sealed envelope must be addressed to "Joe Mancini, Director of Finance, 933 Hopmeadow Street (Rt. 10/202), Simsbury, CT 06070". Bids must be at the office of the Director of Finance prior to 10 a.m., Friday, July 18, 2014. Postmarks are NOT an acceptable waiver of this policy. Once the first bid is opened, all bids are deemed final and no corrections or alterations may be made.
- B. Ditto marks or words such as "SAME" must not be used for the bid to be considered.
- C. All information must be submitted in blue ink or typewritten. Errors, alterations or corrections must be shown on both the original and all required copies and each must be initialed by the person signing the bid.
- D. Bids are considered valid for ninety (90) days after bids are opened. Bidders may not withdraw, cancel or modify their bid during this ninety (90) day period after bids are opened.
- E. An authorized person representing the legal entity of the bidder must sign bids.
- F. The inability to meet any specified requirement(s) must be stated in writing and attached to the bid form, or written on the bid form. If no exceptions are noted, it shall be assumed that the terms of the Invitation to Bid have been accepted.

- G. The Town of Simsbury reserves the right to waive any minor informality in a bid when such a waiver is in the best interest of the Town.

4. Questions:

Any questions about this project should be directed to: Mr. Anthony Piazza, Superintendent, Water Pollution Control by fax (860) 658-6809, or by mail Water Pollution Control 36 Drake Hill Road, Simsbury, CT 06070. To receive consideration, such questions must be received at least four (4) business days before the established date for receipt of bids. No oral interpretations shall be made to any respondent as to the meaning of any of the bid documents. Every request for an interpretation shall be made in writing.

The Town will respond to all appropriate questions received via an addendum available to all prospective bidders. Such addenda will become part of this Invitation to Bid and the resulting contract. At least two (2) days prior to the receipt of bids, the Town will post a copy of any addenda to its website, located at: www.simsbury-ct.gov/finance/pages/public-bids-and-rfp. It shall be the responsibility of each bidder to determine whether addenda have been issued, and if so, to download copies directly from the Town's website.

5. Presumption of Bidder Being Fully Informed:

At the time the first bid is opened, each bidder is presumed to have read and is thoroughly familiar with all bidding documents as well as all contract documents for this project. Failure or omission of the bidder to receive or examine any documentation or information concerning this bid shall in no way relieve any bidder from obligations with respect to their bid.

6. Mandatory Site Visit:

Due to site restriction, all bidders must visit, sign in and inspect the installation area at the Water Pollution Control facility.

7. Interpretation of Acceptable Work:

The specifications, bidding and contract documents are to be interpreted as meaning those acceptable to the Town of Simsbury. The Town will issue any substantive changes or interpretations in writing as an addendum.

8. Tax Exemptions:

The bidder shall be aware that the Town of Simsbury is exempt from Federal Excise Taxes and Connecticut Sales and Use Taxes. Appropriate tax exempt forms will be provided to the successful bidder(s) as part of the contract award process.

9. Insurance Requirements:

The Contractor must carry insurance under which the Town is named as an assured, as follows:

Such insurance must be by insurance companies licensed to write such insurance in Connecticut against the following risks with the following minimum amounts and minimum durations.

A. Workman's Compensation, as required by Connecticut State Statute.

B. Public Liability, Bodily Injury Liability and Property Damage Liability as follows:

Injury or death of one person:	\$1,000,000
Injury to more than one person in a single accident:	\$1,000,000
Property damage in one accident:	\$1,000,000
Property damage in all accidents:	\$1,000,000

C. Automobile and Truck (Vehicular) Public Liability, Bodily Injury Liability and Property Damage Liability as follows:

Injury or death of one person:	\$1,000,000
Injury to more than one person in a single accident:	\$1,000,000
Property damage in one accident:	\$1,000,000
Property damage in all accidents:	\$1,000,000

D. Builders Risk including Fire and Extended coverage:

In an amount equal to the value of construction completed plus materials delivered to the site. Insurance under B, C, D above must provide for a 30 day notice to the Town of cancellation/or restrictive amendment.

Insurance under B and C above must be for the whole duration of the contract and for twelve (12) months after acceptance of the project by the Town.

Insurance under D above must be carried for the whole duration of the project and until acceptance by the Town.

Subcontractors must carry A, B, C in the same amounts as above for the duration of the project and until acceptance by the Town.

Certificates of insurance must be submitted to the Superintendent Water Pollution Control prior to the signing of the contract and within ten days of notification of award of contract. Should any insurance expire or be terminated during the period in which the same is required by this contract, the Superintendent Water Pollution Control shall be notified and such expired or terminated insurance must be replaced with new insurance and a new certificate furnished to the Superintendent Water Pollution Control.

Failure to provide the required insurance and certificates may, at the option of the Town, be held to be a willful and substantial breach of this contract.

10. Substitution for Name Brands:

Should brand name items appear in this bid, the bidder must attach specifications for any substitutions and explain how the substitution compares with the specifications of the named brand. The decision on whether to use the substitution or the named brand rests solely with the Town of Simsbury.

11. Awarding the Bid:

The Town reserves the right to accept any bid or any part of bids, to reject any, all, or any part of bids, and to waive formalities and informalities in the bidding process. The Town at its discretion will award the bid to the lowest responsible bidder. That bidder is the person or firm who is qualified and competent to do the work, whose past performance is satisfactory to the Town and whose bid documents comply with the procedural requirements stated herein.

13. Rejection and/or Cancellation of Bids:

The Town reserves the right to reject or cancel any and all bids, or any part of any or all bids, if such action is deemed to be in the best interest of the Town.

14. Delivery Arrangements: Not applicable

15. Bid Bond: Not applicable

16. Performance Bond: Not applicable

17. W-9 Form

The successful bidder must provide the Town of Simsbury with a completed W-9 Form prior to commencing work.

18. Submittals:

The Bidder shall, as soon as practicable, but not exceed fifteen (30) calendar days, after notification of selection of the award of the bid, furnish to the Owner, in writing the following:

- A. Designation of the Work to be performed by the Contractor’s own forces
- B. Names of the manufacturers, products and suppliers of the principal items of materials proposed for the work
- C. Project work schedule

19. Agreement Documents:

The Agreement Documents are defined as:

- The Standard Instructions to Bidders
- The Agreement as executed
- The General Specifications
- Any Addenda, if issued

**END OF STANDARD INSTRUCTION TO BIDDERS
BID FORM**

IF A SOLELY OWNED COMPANY:

Company Name _____
Address _____
Town _____
By _____
(Authorized Signature)
Title _____ Date _____

IF A CORPORATION OR LIMITED LIABILITY COMPANY:

A corporation or limited liability company organized under the laws of

_____, composed of officers as follows:

_____ President	_____ Secretary
_____ Vice President	_____ Treasurer

IF A PARTNERSHIP:

A partnership doing business under the firm name and style of

_____, composed of partners as follows:

_____ Name & Title (if any)	_____ Name & Title (if any)
_____ Name & Title (if any)	_____ Name & Title (if any)

This Bid must bear the written signature of the BIDDER. If the BIDDER is a partnership, the Bid must be signed by a partner. If the BIDDER is a corporation or limited liability company, the Bid must be signed by a duly authorized officer of such corporation or Limited Liability Company.

BIDDER'S QUALIFICATIONS STATEMENT

The BIDDER shall answer all of the following questions, as part of the Bid, so that the OWNER can judge the BIDDER's ability, experience and facilities for performing the proposed work.

1. Name of BIDDER: _____
2. Bidder's Tax Identification Number: _____
3. What year was company organized/formed? _____
4. How many years has the BIDDER been engaged in business under the present firm or trade name? _____
5. What is the general character or type of work you perform? _____

6. Has a claim ever been brought in court or to arbitration against the BIDDER for failure to complete any contracted work or default on a contract? _____

If yes, explain with whom and why: _____

7. For other similar projects you have under contract at the present time: Attach list with description of work; the name of the client/owner with telephone number; and the approximate value of the work to be performed.

NOTE: The BIDDER is required to have completed a minimum of five (5) similar projects as a demonstration of competency and experience for the project proposed herein. Such projects are to be listed below.

8. Attach a list of all projects that your present organization has completed within the past ten years or is presently working on, including name of project, owner and name and telephone number of the owner's representative. Indicate here how many additional pages attached: ____pages.
9. Attach a list of the names, addresses and the background/experience of all principal or key members of the BIDDERS organization, including its officers:

Indicate the number of pages attached: _____pages

NOTE: If requested, the BIDDER agrees to furnish the OWNER with a detailed financial statement and other relevant information that may be required by the Town of Simsbury to properly evaluate the qualifications of the BIDDER.

PROPOSED SUBCONTRACTORS

BIDDER intends to utilize the following subcontractors on this project:

If none, write "None" here: _____

	NAME AND ADDRESS OF SUBCONTRACTOR	DESCRIPTION OF WORK:
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1.		
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2.		
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3.		
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4.		
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5.		
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6.		
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NON-COLLUSION AFFIDAVIT OF BIDDER

State of _____, County of _____, being first duly sworn, disposes and says that:

1. He is the owner, officer, representative or agent of: _____ the BIDDER that has submitted the attached BID;
2. The attached BID is genuine; it is not a collusive or sham BID.
3. He is fully informed respecting the preparation, and contents of, and knowledgeable of all pertinent circumstances respecting the attached BID.
4. Neither BIDDER nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other bidder, firm or person to submit a collusive or sham BID in connection with the AGREEMENT for which the attached BID has been submitted or to refrain from bidding in connection with any contract, or has in any manner, directly or indirectly, sought by agreement, collusion, communication or conference with any other bidder, firm or person to fix the price or prices in the attached BID or of any other bidder, or to fix any overhead, profit or cost element of the BID prices or the bid price of any other bidder, or to secure through collusion, conspiracy, connivance or unlawful agreement any advantage against the Town of Simsbury or any other person interested in the proposed AGREEMENT.
5. The price(s) quoted in the attached BID are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the BIDDER or any of its agents, representatives, owners, employees, or parties in interest, including this affiant; and
6. That no elected or appointed official or other officer or employee of the Town of Simsbury, who is directly or indirectly interested in this BID, or in the supplies, materials, equipment, work or labor to which it relates, or in any of the profits thereof.

(Signed) _____

(Name of Bidder)

Subscribed and sworn to before me this _____ day of _____, 2014

Title
My Commission expires _____, 20__

**STATEMENT OF BIDDERS COMPLIANCE WITH
EQUAL EMPLOYMENT OPPORTUNITY LAW AND
REGULATION INCLUDING EXECUTIVE ORDER NO. 3**

This statement must be completed by the Bidder and shall accompany his bid for this project.

IT IS HEREBY CERTIFIED THAT:

NAME OF BIDDER: _____

BUSINESS ADDRESS: _____

To the extent required by law, the Bidder has complied on past Contracts and will fully comply on this project with all applicable laws and regulation regarding equal employment opportunities for minorities and women, and;

Has _____ has not _____ previously performed work under the conditions of the Governor's Executive Order No. 3 of the State of Connecticut, or any preceding similar Executive Order with regards to Non-Discrimination.

Signature

Title

Subscribed and sworn to before me this
_____ day of _____, 2014

Title

My Commission expires _____, 20__

IMPORTANT: THIS STATEMENT MUST BE SUBMITTED WITH BID

END OF SECTION

MECHANICALLY CLEANED BAR SCREEN AGREEMENT

This Mechanically Cleaned Bar Screen Agreement (the "Agreement") is entered into the _____ day of _____, 2014 ("Effective Date") by and between the Town of Simsbury, a political subdivision of the State of Connecticut (the "Town") and _____, a _____ located at _____, _____ (the "Contractor").

WHEREAS, the Town has issued an Invitation for Bid (the "IFB") for Mechanically Cleaned Bar Screen for the Town of Simsbury, Water Pollution Control; and

WHEREAS, Contractor submitted its Bid to the Town on (date) _____, for the Work in accordance with the requirements and specifications of the IFB; and

WHEREAS, the Town has selected Contractor and the Town and the Contractor desire to enter into a formal Agreement for the performance of the Work;

THEREFORE, in consideration of the recitals set forth above and the mutual promises by the parties below, the parties agree as follows:

1. General. The Contractor agrees to provide the Equipment in accordance with this Agreement, Standard Instructions to Bidders and the General Specifications (collectively the "Contract Documents"). The Contract Documents represent the entire and integrated agreement between the Town and the Contractor and supersede all prior negotiations, representations or agreements, whether written or oral.
2. Duties. Contractor shall provide the Equipment described in the Contract Documents except for any work that is specifically prescribed in the Contract Documents to be the responsibility of another vendor or the Town. Contractor shall furnish all labor, equipment, trucks, materials, facilities, supplies, transport, and any other things necessary to carry out the terms of the Agreement Documents.
3. Permits and Standards. Contractor shall, at its own expense, obtain all required permits and agreements from the Town, federal, state or other governmental authority for performance of the Work in accordance with the standards prescribed by the federal Environmental Protection Agency, the Occupational Safety and Health Administration, NIOSH, the Department of Energy & Environmental Protection of the State of Connecticut and any other federal, state or local government laws and regulations. In the event of a conflict or overlap of any such laws or regulations, the most stringent provisions shall be applicable.
4. Compliance with Laws. Contractor shall comply with all federal, state and local laws and regulations governing the Work whether or not such laws and regulations are fully and properly reflected in the IFB.

5. Term. The term of this Agreement shall commence on the Effective Date of this Agreement and be in effect until completion, which shall be not later than (date)_____. The contractor shall not start the Work prior to having received a notification to proceed from the Town.

6. Payment. The Town will pay the Contractor the sum of _____ Dollars (\$) upon the completion by the Contractor of all Work required to be performed under the terms of the Contract Documents and acceptance of the Work by the Town.

7. Insurance. The Contractor shall carry and keep in force during the term of this Agreement insurance as more specifically described in Section 10 of the Standard Instructions to Bidders, by a company or companies authorized to do business in Connecticut. The Company shall provide certificates of insurance specifying such coverage and naming the Town as additional insured prior to the start of the work and shall provide a complete copy of the Owners, Contractors Protective Liability policy.

8. Liability. The Contractor agrees to assume full responsibility and liability for damage or injury to persons or real or tangible personal property caused directly or indirectly by the negligent or tortuous actions or inactions of the Contractor, its agents, employees or subcontractors with respect to the Work. The Contractor further agrees to assume full responsibility and liability for the Contractor's failure to comply with any applicable federal, state or local law or regulation in the performance of Contractor's duties pursuant to the Contract Documents.

9. Hold Harmless. The Contractor agrees to indemnify and save harmless the Town of Simsbury, its agents and employees, from and against all loss or expense, (including costs and attorneys' fees), arising out of or resulting from the performance of the Work by the Contractor by reason or liability imposed upon the Town of Simsbury, its agents and employees, for damages because of bodily injury, including death at any time resulting there from, sustained by any person or persons, (including employees of the Contractor), or on account of damage to property, including loss of use thereof, if such injuries or damages are caused by the negligence or breach of Agreement documents of the Contractor, its' agents and employees or otherwise. The existence of insurance shall in no way limit the scope of this indemnification. The indemnification provision shall be separate and distinct from issuance of a Certificate of Insurance.

10. Assignment. This Assignment shall be binding upon each of the Parties, their successors, executors, administrators and assigns. The Contractor shall not assign, sublet, contract, or otherwise transfer its interest, in whole or in part, in this Agreement without the express written consent of the Town. None of the work or services covered by this Agreement shall be subcontracted without the prior written approval of Town.

11. Termination. If the Contractor fails to perform the work under the Contract Documents in accordance with its terms, the Town shall have the right, in addition to all other remedies it may have, to declare the Agreement in default and, therefore, terminated and to resubmit the Agreement for further bid. In that event, the Contractor shall pay the Town, as liquidated damages, the amount of any excess of the new Agreement Price over the Agreement Price herein provided for, both prorated to the period of time covered by the unexpired term of the Agreement at the time of default, plus any legal or other costs incurred by the Town in terminating the Agreement and securing a new contractor.

12. Contract Documents. The Contract Documents include, without limitation, the following:

(i) This Agreement; and

(ii) The IFB, including the Standard Instructions to Bidders, General Specifications and Insurance Coverage and;

(iii) Any addenda issued prior to the execution of this Agreement or modifications issued after the execution of this Agreement;

13. Change Orders, Price Modifications, and Other Amendments. The Town shall have the right to require the Contractor to make alterations of, additions to and deductions from the Scope of Work. All such changes to the Scope of Work shall be made by a written change order written by the Town. The Contractor shall compute the cost of the work under change order upon the Agreement price, subject to review and acceptance by the Town. Any other changes or amendments to the terms of this Agreement and the other Contract Documents may be made only by a written document referencing this Agreement and executed by both parties.

14. Governing Law/Venue: The laws of the State of Connecticut shall govern the formation, interpretation, and performance of this Agreement. No lawsuit pertaining to any matter under or growing out of this Agreement shall be instituted in any state other than Connecticut. The Parties agree that the venue for any legal proceeding in respect to this Agreement shall be Connecticut Superior Court, Judicial District of Hartford at Hartford. Venue for mediation shall be Hartford County.

15. Independent Contractor: Contractor's personnel shall be and remain an independent consultant with respect to all services performed hereunder and agrees to and does hereby accept full and exclusive liability for payment of any and all contributions or taxes for social security, unemployment insurances, or old age retirement benefits, pensions, or annuities now or hereafter imposed under any local, state or federal law which are measured by the wages, salaries, or other remuneration paid to persons employed by Contractor for work performed under the terms of this Agreement. Contractor further agrees to obey all lawful rules and regulations and to meet all lawful requirements which are now or hereafter may be issued or promulgated under said respective laws by and duly authorized by state or federal officials. Contractor also agrees to indemnify and hold harmless Simsbury from contributions or taxes or liability.

16. Payment of Subconsultants: Contractor shall well, truly and promptly pay or satisfy the just and equitable claims of all persons who have performed labor or furnished materials or equipment for Contractor in the execution of this Agreement, and all bills, costs or claims of whatever kind which might in law or equity become a lien upon said work.

17. Amendment: Any changes to the terms and conditions as outlined herein must be mutually agreed upon by and between the Parties shall be incorporated in written amendments hereto, executed with the same formalities as this Agreement. No amendment or modification of this Agreement shall be effective until executed by the Parties.

18. Execution. This Agreement may be executed in one or more counterparts, each of which shall be considered an original instrument, but all of which shall be considered one and the same agreement, and shall become binding when one or more counterparts have been signed by each of the parties hereto and delivered (including delivery by facsimile) to each of the parties.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the day and year first written above.

TOWN OF SIMSBURY

CONTRACTOR

BY _____

BY _____

Its
Duly Authorized

Its
Duly Authorized

SIMSBURY, CT – WPC INFLUENT CHANNEL MECHANICALLY CLEANED BAR SCREEN

PART 1 – GENERAL

1.1 SUMMARY

- A.** This section includes the furnishing of one (1) front-cleaning, front-return link driven mechanically cleaned bar screen assembly to be installed by the Town in the main inlet channel of the Water Pollution Control Facility in Simsbury, CT. The channel itself measures 2 feet 8 inches wide x 8 feet deep and has a maximum raw sewage flow capacity of 9 MGD. Screen openings shall be 1/4 ". Additional details are found in the Appendix at the end of this specification section.
- B.** All equipment supplied under this section shall be furnished by or through a single Screening System Supplier who shall coordinate with the Town, the design, fabrication, delivery and testing of the screening components. The Screening System Supplier shall have the sole responsibility for the coordination and performance of all components of the screenings system with the performance and design criteria specified herein.
- C.** The equipment shall be fabricated to facilitate installation in the intended location at the Town's Facility. Manufacturing deviations from the specified dimension may impact the Town's cost of installation. Any anticipated additional installation costs due to equipment variations will be taken into account by the Town in evaluating bid submissions.
- D.** Site Restrictions: The mechanical bar screen must be rigged horizontally, then angled through the channel opening on the operating floor. There is a height limit of 10' 3". To assist in rigging, the frame of the screen provided under this bid must be fabricated in Sections that will allow the individual segments to be lowered through this opening and re-assembled.

1.2 REFERENCE STANDARDS

- A.** American National Standards Institute (ANSI)
- B.** American Society for Testing and Materials (ASTM)
- C.** American Welding Society (AWS)
- D.** American Institute of Steel Construction (AISC)
- E.** American Bearing Manufacturers Association (ABMA)
- F.** American Gear Manufacturers Association (AGMA)
- G.** National Electrical Manufacturers Association (NEMA)
- H.** Underwriters Laboratory (UL)

1.3 SUBMITTALS

- A.** The equipment manufacturer shall submit the following items:

1. General Arrangement drawings that illustrate the layout of the equipment, equipment weight, principal dimensions with related verifications required for installation including anchorage locations. Other related data including descriptive literature, Electrical Control Drawings, Catalog Cut Sheets for individual components and Drive Motor Data. See Appendix for quantity required.
2. A list of recommended Spare Parts
3. Any Special Tools required for routine maintenance of the equipment shall be provided under this specification at no additional cost.
4. Three O & M Manuals including As-Built Drawings of the Mechanically Cleaned Bar Screen Arrangement, Controls and Accessories shall be provided after equipment ship for inclusion in the Close-Out Submittal process.

1.4 QUALITY ASSURANCE

- A.** The Mechanically Cleaned Bar Screens shall be fully assembled and shop tested at the manufacturing facility prior to shipment.
- B.** All equipment furnished under this Section and related sections shall be of a single manufacturer who has been regularly engaged in the design and manufacture of the equipment and demonstrates, to the satisfaction of the Engineer, that the quality is equal to equipment made by those manufacturers specifically named herein. The screen manufacturer shall have at least 25 installations of mechanically cleaned bar screen equipment that has been in successful operation, at similar installation, for at least five (5) years.
- C.** The equipment furnished shall be fabricated in full conformity with approved drawings, specifications, engineering data, and/or recommendations furnished by the equipment manufacturer.

1.5 WARRANTY

- A.** Manufacturer shall provide a written one year standard warranty from the date of use of the mechanically cleaned bar screen equipment to guarantee that there shall be no defects in material or workmanship in any item supplied.
- B.** Manufacturer shall warrant for the period of 5 years all rotating parts of the Mechanically Cleaned Bar Screen including the gear motor, bearing, drive head, and the link system including the links, castings, pins and retaining rings. Manufacturer warrants that these components shall be replaced if damaged or defective in the normal use of the equipment.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. The basis of design is a FlexRake Full Penetration Fine Screen as manufactured by Duperon Corporation, 1200 Leon Scott Court, Saginaw, Michigan.
- B. The Town may evaluate alternate screen bid submittal.

2.2 BASIS OF DESIGN

- A. The mechanically cleaned bar screen shall have a head sprocket only, with no sprockets, bearings, or similar drive components under water to trap the chain. ***Equipment featuring reciprocating rake arms or lower bearings/sprockets/tracks below the water are not acceptable.***
- B. The mechanically cleaned bar screen shall run continuously without an operator.
- C. The equipment shall have multiple scrapers/stagers on the bar screen at one time cleaning continuously from bottom to top, the entire width of the bar screen . The drive output shaft rotation shall be constant and in one direction in order to reduce maintenance. Units which have single raking arms shall not be allowed. Cleaning mechanisms that utilize shock absorbers, springs or other dampening or hydraulic actuations are unacceptable.
- D. The link system shall have jam evasion capability by flexing around and collecting large objects such as a 2 X 4, grease balls and surges of solids at peak loading times without overloading and shutting down the unit. The link system shall be such that it bends in one direction only which allows it to become its own lower sprocket and frame and shall have a 1,000 pound lifting capacity.
- E. Designs employing the use of endless moving media or cables and hydraulic cylinders to remove debris from the channel and units utilizing proximity or limit switches for reverse cycles are not acceptable.
- F. Equipment utilizing a greater than ½ HP motor or more multiple motors to complete a screen cleaning cycle is not acceptable.
- G. The design shall be such to ensure that all maintenance can be accomplished at the operating floor level. No part of the drive system including sprockets shall be located below the water surface at maximum design flow.

2.3 COMPONENTS

- A. **Bar screen assembly:** Bar screen assembly shall be of stainless steel and designed to withstand 1 foot head differential unless noted otherwise in appendix. Unless noted otherwise materials of construction shall be 304

Stainless Steel. A stainless steel channel bottom plate shall be an integral part of the bar screen assembly to fully engage scrapers in the bar screen at the base of the unit and assure that the raking mechanism reaches the bottom of the screen to prevent debris accumulation. The Bar screen frame assembly shall be manufactured in two or three pieces then bolted together for factory testing and shipping. To rig into the building the screen must be able to be disassembled and reassembled by the Town's installation staff.

1. **Screen Bars:** Bars shall be 316L stainless steel and be **tear-shaped** with a Hydraulic Coefficient shape factor of 0.76 and the minimum dimensions of 0.25 inch x 0.75 inch x 0.13 inch. Bars shall be individually replaceable without welding.
 2. **Side Fabrication:** The screen framework shall be 304 stainless steel bent plate with minimum of 3/16 inch cross section. Horizontal members shall be of stainless steel bent plate or stainless steel pipe. Support members and frame shall adequately support the bar screen based on site specific requirements.
 3. **Dead Plate:** Dead plate shall be 0.25 inch thick 304 stainless steel. The dead plate shall be flat and true; span the entire width of the unit; and transition from bar screen to discharge point.
 4. **Discharge Chute:** The discharge chute shall be 11 gauge (0.12 inch) 304 stainless steel. The discharge chute shall be bolted to the dead plate and shall be designed to allow debris to be transferred from discharge point into a grinder washer compactor or debris container.
 5. **Link Slides:** Link slide assembly shall be provided per manufacturer standard design and shall be constructed of UV Stable ultra-high molecular weight polyethylene (UHMWPE) rollers and 304 stainless steel supports and components.
- B. Return Guide/Closeouts:** Return guide/Closeouts shall be 304 stainless steel and shall assure proper alignment of scrapers as they enter the bar screen and assure that there is no space wider than the clear opening between bars to prevent passage of larger solids than allowed through the screen.
- C. Debris Blade:** A 304 stainless steel and UV Stable UHMWPE debris blade assembly, which does not require a separate drive, shall be installed to assist in removing debris from the scraper on the mechanically cleaned bar screen unit as recommended by the manufacturer.
- D. Side Shields:** Side shields of 14 gauge # 4 brushed satin finish 304 SSTL shall be provided to help keep debris within the screen field.
- E. Screen Enclosure (Optional):** As an alternative to the side shields (2.3.D), a 14 gauge # 4 brushed satin finish 304 SSTL Enclosure shall be installed to cover the screen from the top of the channel to the top of the screen. Front

Enclosure shall have 304 SSTL removable panels for access to equipment. Removable panels shall be 16 gauge 304 SSTL and shall be provided with knurled knobs for "no tool required" access. Alignment notches shall be included to support repositioning of removable panels. The top of the Front enclosure shall include a knock out for a customer site option to install a 6-inch diameter pipe stub for connecting to the site's exhaust or odor control system (by others), to provide a positive air exchange from interior of enclosure. Rear enclosure shall have hinged removable doors and shall be secured with a lift-slide-latch handle. Rear removable door shall include an integral viewing door that shall be secured with a lift-slide-latch handle to provide access for a quick look inside.

F. Rear Screen Enclosure: An enclosure on the rear of the screen shall have hinged removable doors and shall be secured with a lift-slide-latch handle. Rear removable door shall include an integral viewing door that shall be secured with a lift-slide-latch handle to provide access for a quick look inside.

G. Link System: The link system shall be stainless steel castings and have a minimum ultimate strength of 60,000 lbs with a minimum cross section of 1.5 inches and weighing a minimum of 4.5 lbs each.

1. 304 stainless steel system includes 302 stainless steel retaining rings and 304 stainless steel pins.

H. Scrapers: Scrapers shall be spaced 21 inches apart. The scraper shall move at no greater than 28 inches per minute at standard operating speed of ½ rpm allowing for approximately 1 debris discharge per minute. Staging Scrapers and Thru Bar Scrapers shall be a ratio of 1:1. At least one scraper every 42 inches shall fully penetrate the bar screen, cleaning all three sides of the bars as well as through to the cross members in openings of 0.25 inches.

1. **Staging Scrapers;** Staging Scrapers shall be 1 inch thick x 4 inches x screen width UV Stable UHMWPE with a serrated edge.

2. **Thru Bar Scrapers:** Thru Bar Scrapers shall be minimum .375 inch thick x 5 inches x screen width 304 stainless steel.

I. Drive Head: The Drive Head shall be located at the top of the mechanically cleaned bar screen.

1. **Drive Unit:** Each mechanically cleaned bar screen unit shall operate independently and shall have its own drive unit and driven components.

- a. Drive Sprockets shall be coated ASTM A48, CL40 cast iron with ASTM A536 80-55-06 ductile cast iron end castings.

- b. Drive Shaft shall be AISI 1018 steel

- c. Gearbox shall be shaft-mounted, right angle type and include spiral bevel gearing. The output shaft speed shall be controlled by a vector type inverter or per rake manufacturer's recommendation. It shall have at least a 1.52 or greater service factor based on machine torque requirements. The gearbox shall not be vented to the outside atmosphere. The gearbox shall be grease filled. Oil filled gearboxes are not allowed.
 - d. The motor shall be AC induction type, inverter duty, 3 phase 240/480 volt and mounted to the gear reducer. The motor shall be ½ hp, designed for 1800 RPMs base speed and rated for Class I, Groups C & D, Class II Groups F & G environments. The motor shall have an EPNV enclosure, NEMA design B with a 56C frame size. Service factor shall not exceed 1.0 with 1600V, Class F insulation rated for temperatures up to 40 degrees C and 1600 volts and be optimized for IGBT type inverters. The motor must be UL listed and designed for continuous operation.
 - e. Motor shall have built in, normally closed, thermostat to protect from overheating that is to be field wired to corresponding terminal in control panel for redundant (ambient) overload protection.
 - f. All drive head components shall be of components available in the United States.
2. **Bearing:** Bearing shall be greased ball bearing type, non self-aligning, sealed and lubricated and shall have a 24/7/365 L10 life of 20 years when in compliance with stated O&M recommendations.
3. **Speed Reducer:** Speed reducer shall be a double-reduction, cycloidal style and shall comply with all applicable AGMA standards. The speed reducer shall be capable of a 4/1 speed range with variable output speeds between 0.50 to 2.2 output RPMs (in high flow conditions). The speed reducer shall produce an output torque of 11,417 in.lb. and have a gear ratio of 809:1.
- J. **Standard Coating:** All non-stainless bar screen components shall be coated in strict accordance with the paint manufacturer's specification. Surface Preparation shall be done in accordance with SSPC-SP-10 Near White. The three-part coating system shall be manufactured by Tnemec as follows: Prime Coat Series 90-97 Tnemec Zinc at 2.5-3.5 mils DFT, Intermediate Coat Series 27 F.C. Typoxy at 3.0-5.0 mils DFT, and Top Coat Series 1075U Endura-Shield II at 2.0-3.0 mils DFT. Standard color is 11SF Safety Blue. Material shall meet all state and federal VOC and other regulatory requirements.

2.4 CONTROLS

Screen shall operate at a single speed with an on-off timer that is easily set by the operator. At high water levels, the timer shall be overridden by a single channel-mounted float switch so that the screen operates continuously until the float returns to its "off" position with normal water levels.

General:

- Normal operation is at low speed (as slow as 21 inches per minute) on a timer. Screen speed and on-off cycle times are easily set by the operator with a touch screen on the main control panel enclosure.
- A. Controls shall be in enclosures provided by the bar screen manufacturer. The bar screen manufacturer shall be responsible for proper sizing and function of the controls at 480V, unless specified otherwise.
1. Controls shall be designed to accept incoming power supply per plans/specs and shall include a step-down transformer as needed to achieve 120V.
 2. Control Panel(s) shall be constructed to meet the appropriate NEMA classification requirements and will include a main, lockable disconnect. The panel will be constructed by a UL certified control panel build facility and will be supported by the appropriate UL labeling.
 3. Controls shall be tested prior to shipment to owner. The rake manufacturer shall verify all overload settings in the rake controller to insure proper overload and speed settings required for the application are properly programmed.
 4. Control panel(s) shall be wired complete with a minimum of #16 MTW wire in the appropriate colors for the circuits being supplied. 120VAC control shall be red, grounded AC neutral shall be white, DC control shall be blue, DC neutral shall be blue with a white tracer, equipment ground shall be green and all incoming and outgoing external power source wires shall be a yellow configuration. All AC power wiring shall be a minimum of #12 Black. All wires shall be labeled at both ends with heat-shrink wire markers. Internal panel wiring shall be contained in non-flammable, covered wire way.
 5. All panel(s) and panel mounted devices shall be labeled with engraved I.D. markers that reference back to the system schematics. Tags shall be white with black core, engraved as required.
 6. All field wiring and power cables between the bar screen Main Control Panel and the Local Push Button Station shall be provided by others under the Electrical Section.

Components:

1. Main Control Panel

Enclosure shall be NEMA 4X 304 stainless steel and have a continuous hinge, exterior, lockable door intended for installation in a non-explosive environment.

- a. Enclosure shall not be located in an explosive environment.
- b. Main Control Panel shall be designed with a SCCR rating of 18KA at 480VAC minimum and labeled as such, unless otherwise specified.
- c. All terminals utilized in the main panel shall be 600V rated terminals and 20% spare terminal space shall be provided for any potential future revisions.
- d. The Main Control Panel shall include at a minimum the following
 - Main fusible disconnect with lockable operator, unless otherwise specified.
 - Physical or virtual Hand/Off/Auto (HOA) Selector and Push/pull E-Stop button.
 - Elapsed run-time meter
 - Indication for "Power On", "Forward" and necessary faults.
- f. Relay Based Controls shall include the following:
 - Variable Frequency Drive (VFD)
 - Electronic torque control
 - Hard contact SCADA Interlock(s)
 - Adjustable on/off cycle timers

2. Local Control Push Button Station

- a) Enclosure shall be NEMA 7/9 rated for Classified area installation. Local push button station must be local to the equipment to maintain requirements of local safety codes as determined by the Engineer.
- b) Local station shall be mounted as close to the equipment as safely possible and be field wired by the electrical subcontractor to the corresponding terminal inputs in the main control panel.
- c) The remote pushbutton station shall include Forward, Jog Reverse and E-Stop buttons.

3. Level Control

- a) Provide one (1) Mechanical Float Switches, each with intrinsically-safe barrier and 40 foot long cable, to provide water level feedback to override the timer and operate the screen continuously at either normal or high speed as described above in 2.4 General.

2.5 SPECIALTY TOOLS, SPARE PARTS AND LUBRICATION

- A. Manufacturer shall provide any specialty tools and recommend spare parts required for maintaining the equipment as follows:
 - 1. Drive Clevis Pin (1)
 - 2. Snap/Retaining Rings (10)
 - 3. Link Clevis Pins (4)
 - 4. Scraper Bolts (4)
 - 5. Scraper Nuts (4)
 - 6. Snap Ring Tool (1)
 - 7. Never Seez, 3 oz. tube (1)
- B. Manufacturer shall provide a 5-year supply of lubrication required for maintaining all bar screen components.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Equipment will be installed by the Town in strict conformance with the manufacturer’s installation instructions, as submitted with Shop Drawings, Operation and Maintenance Manuals and/or any pre-installation checklists. Installation shall utilize standard torque values. The manufacture shall specify any and all site preparation tasks and requirements specific to the equipment provided under this specification; including unloading, touch-up painting, etc. and any other installation tasks and materials such as wiring, conduit, controls stands as determined by and/or specified by the manufacturer.
- B. **Anchor Bolts:** Anchor bolts and nuts shall be stainless steel and furnished by the Town in accordance with the manufactures detailed recommended installation requirements.
 - a. Anchor bolt template drawings shall be included in the submittal to permit verification of the location structural elements, new or existing in the concrete.
 - b. Anchor bolt sizes, quantity and requirements will be indicated on the submittal drawings. Quantity shall be site specific to the location intended under this specification.

3.2 TESTING AND START UP CERTIFICATION

- A.** After completion of installation, the bidder shall provide for testing and Field certification, which shall be performed in strict conformance with the manufacturer's start up instructions. Testing of the bar screen shall demonstrate that the equipment is fully operational by picking up and depositing materials into specified containment.
- B.** Field certification shall include inspection of the following:
 - 1.** Verify equipment is properly aligned and anchored per the installation instruction and drawings. Assure the bar screen unit is square, flat and unobstructed with required clearances maintained.
 - 2.** Assure controls and instrumentation work in all modes.
 - 3.** Check equipment for proper operation of debris blade, scrapers, etc as well as completion of the Start-Up requirements in the installation guide.

3.3 ONSITE TECHNICAL ASSISTANCE

- A.** Provide manufacturer's to include installation Certification, Start-Up and Training. Manufacturer shall be given minimum 10 days notification prior to the need for such services.

Appendix: Water Pollution Control Facility, Simsbury, CT

Quantity of mechanically cleaned bar screens:	One (1)
Auxiliary Equipment:	Screen will discharge in to a future grinder-washer-compactor

Design Parameters:

Channel Width:	2' 8"
Channel Height:	8' 3"
Operating Floor Height above Channel Invert:	8' 3"
Bar Clear Opening Size:	1/4" inches
Angle of Installation:	30 degrees from vertical
Average Flow:	2 MGD
Maximum Flow:	10 MGD
Maximum Head Differential:	1.00 ft
Screenings Container Height:	40" Min above operating floor
Material of Construction:	304 SS
Link Material of Construction:	304 SS
Estimated Weight	5900 lbs.
Indoor Installation:	
Site Access Constraints:	Modular construction is required. The Town's installation staff will need to disassemble the bar screen in locations directed by manufacturer and then reassemble the bar screen in the facility. See specification section 1.1(D) site restrictions.
Incoming Power: (Voltage/Phase)	Main disconnect for 460/3/60 incoming power