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ARTICLE 1 - PROJECT DESCRIPTION

Scope of Work

1.1 The work to be performed shall consist of the demolition and removal of existing troughs and supporting I-beams in the two northern basins (noted as "Clarifier No. 1" and "Clarifier No. 2" on Project Plans) and the southeast basin (noted as "Clarifier No. 3" on Project Plans) of the Intermediate Clarifier at the Water Reclamation Facility of the Metropolitan Sewerage District of Buncombe County, North Carolina. The project shall generally consist of the furnishing of all services, supplies, materials and equipment, and performing of all labor for the demolition and disposal of existing flights and chain system, troughs and supports, as well as installation of flight and chain system (pre-ordered by MSD) and design, delivery, and installation of replacement troughs and supports.

1.2 Underdeck equipment (flight and chain system) has been pre-ordered and will be supplied by MSD to the CONTRACTOR. Underdeck equipment is manufactured and supplied to MSD by Brentwood Industries. Details and specifications can be found at the end of this section.

1.3 Approximate trough quantities are as follows:
12" W x 18" D* troughs: 1,879.5 LF (626.5 LF per basin)
24" W x 37" D* troughs: 390 LF (130 LF per basin)

*Depths are taken from approximate top of weir plate.

Existing trough supports to be replaced are located at the mid-point of each north-south 12" tough section (16 per basin). Supports are W8x31 I-beams, approximately 16.25 feet in length.

Existing FRP baffles may remain in place.

CONTRACTOR shall be responsible for field-verifying dimensions of individual troughs prior to ordering materials. LIDAR scan or traditional survey is suggested to ensure highest accuracy and best fit of new troughs.

1.3 The work shall be performed under lump sum price contract, and shall consist of furnishing all materials, supplies, and equipment; performing all labor and services incidental to or necessary for the completion of the project in accordance with the Plans and Specifications; and maintenance of each completed portion of the work until final acceptance of the entire project by the DISTRICT, unless otherwise approved by the ENGINEER. Project shall be awarded based on lowest bid price.

1.4 Effluent trough MANUFACTURER shall warrantee the fiberglass reinforced troughs to be free of defects in materials and workmanship for a minimum of two (2) years after installation under normal use, operation, and service.

In the event a component fails to perform as specified or is proven defective in service during the guarantee period, the manufacturer shall provide a replacement part without cost to the Owner. The contractor shall provide, without cost, such labor as may be required to replace, repair or modify all materials and equipment provided pursuant to this specification.

ARTICLE 2 - PHYSICAL CONDITIONS/CONTRACT PLANS

2.1 **Site Conditions.** MSD Plant Operations staff shall be responsible for draining and initial washdown of the basins. Some residual clarifier sludge may be present in the bottom of the basins.

2.2 **Coordination with MSD Staff**

The CONTRACTOR shall coordinate with MSD Plant Operations staff regarding the timing of the project, including draining and filling of the clarifier basins. MSD Plant Operations staff will be responsible for draining and an initial washdown of the basin, which generally takes 48 hours. **The CONTRACTOR shall complete work in one basin prior to beginning work in the next basin to maximize the flow capacity of the Intermediate Clarifiers.**

2.3 **Contract Plans.** The work shall be performed in accordance with these specifications and contract plans, which are incorporated herein as part of the contract and which are identified by the following numbers and titles:

Sheet No.	Description
PL-1	Effluent troughs - plan and detailed sectional views
PL-2	Effluent troughs – Elevations and details
D-1	Existing Trough as-builts
D-2	Existing Trough as-builts
D-3	Existing Trough as-builts

ARTICLE 3 - PROJECT COORDINATION

3.1 **Intent of Plans and Specifications**

The intent of the Plans and Specifications is to prescribe a complete work that the CONTRACTOR undertakes to do in full compliance with the Contract. The CONTRACTOR shall do all work as provided in the Plans and Specifications and other parts of the Contract and shall do such additional, extra, and incidental work as may be considered necessary to complete the work in a satisfactory and acceptable manner. Any work or material not shown on the Plans or described in the Specifications, but which may be fairly implied as included in any item of the Contract, shall be performed and/or furnished by the CONTRACTOR without additional charge, therefore. The CONTRACTOR shall furnish all labor, materials, tools, equipment, and incidentals necessary for the prosecution of the work.

3.2 **Interpretation of Estimate**

The quantities of the work and materials shown on the Proposal form or on the Plans are believed to approximately represent the work to be performed and materials to be furnished and are to be used for comparison of bids. Payment to the CONTRACTOR will be made only for the actual quantities of work performed or materials furnished in accordance with the Plans and Specifications, and it is understood that the quantities may be increased or decreased as hereinafter provided without in any way invalidating the bid prices.

3.3 **Time of Completion**

The CONTRACTOR shall commence ordering of troughs on a date to be specified in a written Notice to Proceed from the DISTRICT. Final approved submittals are expected from the MANUFACTURER within ninety (90) calendar days of Notice to Proceed. Delivery of the troughs for the first basin is expected within one hundred and eighty (180) calendar days of Notice to Proceed.

All work to be performed on the project under this agreement shall be duly completed within **four hundred and seventy-eight (478) consecutive calendar days** from Notice to Proceed. Working times shall be normal MSD working hours, Monday through Friday, 8:00 a.m. – 4:30 p.m. No work is to be done on MSD holidays or weekends or outside of normal MSD working hours without prior approval of the Engineer and MSD Inspections Manager.

For each day in excess of the completion time limits specified above, the CONTRACTOR shall pay the DISTRICT the sum of Five Hundred Dollars ($500.00) as liquidated damages reasonably estimated in advance to cover the losses incurred by the DISTRICT by reason of failure of said CONTRACTOR to complete the work within the time specified, such time being in the essence of this Contract and a material consideration thereof. MSD will award the CONTRACTOR an early completion bonus of $500 per day should the work be completed prior to the contract end date.

3.4 **Pre-Construction Conference**

Prior to starting any construction work on this project, a conference will be held in the Construction Office of the DISTRICT for the purpose of verifying general construction procedures, expediting the handling of shop drawings and schedules, and to establish a working understanding between the parties concerned on the project. Present at the conference shall be a responsible representative of the CONTRACTOR and the CONTRACTOR's job superintendent. The time of the conference shall be as agreed upon by the CONTRACTOR and DISTRICT.

3.5 **Progress Meetings**

The CONTRACTOR and any subcontractors, material suppliers or vendors whose presence is necessary or requested shall attend meetings, referred to as Progress Meetings, when requested by the DISTRICT for the purpose of discussing the execution of the work. Each meeting will be held at the time and place designated by the DISTRICT. A schedule for monthly meetings will be agreed upon at the pre-construction conference. The ENGINEER will call for and schedule additional meetings if necessary. All decisions, instructions and interpretations made at these meetings shall be binding and conclusive of the CONTRACTOR and such decisions, instructions and interpretations shall be confirmed in writing by the DISTRICT.

The proceedings of these meetings will be recorded, and the CONTRACTOR will be furnished with a reasonable number of copies for his use and for his distribution to the subcontractors' material suppliers and vendors involved.

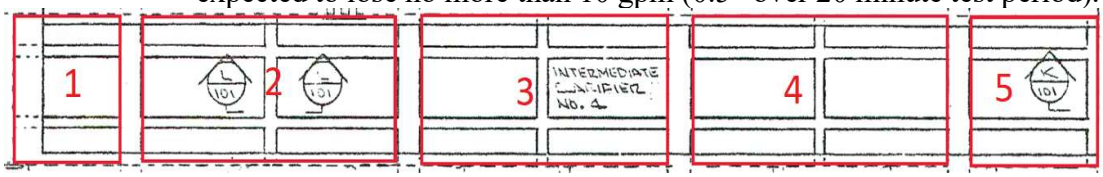
3.6 Startup Testing

MANUFACTURER shall provide a representative for a minimum of two (2) days of startup testing per basin.

Startup testing for the underdeck equipment is included in Brentwood's equipment supply contract with MSD and will include verification that all equipment has been installed in accordance with the MANUFACTURER's specifications and starting and running the chain through a minimum of two (2) complete revolutions.

Startup testing, coordinated by the CONTRACTOR, for the trough system shall include leak testing of the trough system and verification of weir heights. Leak testing shall be conducted as follows:

- Once all troughs have been installed, CONTRACTOR shall fill each connected 12" width trough group (see diagram below) and each 24" width trough to 6" depth, and hold for 20 minutes. Individual trough groups are expected to lose no more than 10 gpm (0.5" over 20 minute test period).



- Once the initial leak test has been passed, all troughs shall be drained, and the clarifier basin shall be filled by MSD staff to within 1" of weir valleys. MSD staff and the CONTRACTOR will conduct a visual inspection to observe any leaks in trough walls or weir plates in need of adjustment. Weir plates shall be adjusted to bring all weirs to the within 0.1" of a standard elevation.
- Once all weir plates are adjusted and leaks found in previous tests have been patched, MSD staff will again fill the basin to within 1" of weir valleys. Each 24" wide trough is expected accumulate no more than 300 gallons (7 inch

increase in water depth) from their respective portion of the trough system over the course 60 minutes.

ARTICLE 4 - SPECIAL REQUIREMENTS – FIBERGLASS REINFORCED PLASTIC TROUGH SPECIFICATIONS

4.1 Quality Assurance

The material covered by the specifications shall be furnished by a reputable and qualified manufacturer of proven ability that is regularly engaged in the manufacture and installation of FRP products.

The trough manufacturer shall be experienced in successfully producing FRP products specified for this project, with sufficient production capacity to produce required units without causing delay in the work.

The trough manufacturer shall provide with their bid, a list of five (5) installations of comparable size in operation for at least five (5) years.

4.2 Submittals

The following shall be submitted in accordance with the General and Special Conditions:

a. Shop Drawings
   1. Dimensions.
   2. Job specific layout.
   3. Sectional assembly.
   4. Location and identification mark.
   5. Weir locations and attachment
   6. Scum Baffle locations and attachment.
   7. Accessories, attachments, transition pieces.
   8. Connection details, including gasket or sealing material
   9. Support details

b. Manufacturer's catalog data showing:
   1. Dimensions, spacing, and construction details.
   2. Materials of construction.
   3. Description.

c. Certificates
   1. Manufacturer shall submit design calculations showing trough design meets the requirements of this specification, as well as a certification that all materials furnished are in compliance with the applicable requirements of this specification.

d. Manufacturer's Instructions
    1. Submit complete information and instructions relating to the storage, handling, installation, and inspection of all equipment related to this Section.

4.3 Shipping and Storage Instructions

a. All FRP components shall be shop fabricated and assembled into the largest practical size suitable for transporting.

b. The parts and assemblies that are shipped unassembled shall be packaged and tagged in a manner that will protect the equipment from damage and facilitate the final assembly in the field.

c. All FRP materials shall be stored before, during, and after shipment in a manner to prevent cracking, twisting, bending, breaking, chipping or damage of any kind to the materials.

4.4 Manufacturers

The following FRP trough manufacturers have been pre-approved for this project:
NEFCO, Incorporated
Fiberglass Fabricators Incorporated

Other FRP trough manufacturers/fabricators must submit specifications and be pre-approved prior to the bid opening. Pre-approved manufacturers, in addition to those listed above will be incorporated into the specifications via addendum prior to bid opening.

Submissions for pre-approval must be received no later than 14 days prior to the published bid date.

4.5 Design Criteria

a. Gravity Load - Downward vertical loads shall include the weight of the trough and appurtenance attachments, such as weir plates, baffles and spreader bars, together with the weight of water to fill the trough. Any additional loads, such as piping, etc., shall also be considered.

b. Buoyant Load - The buoyant load shall act vertically upward, its magnitude equal to the weight of displaced water (trough weight neglected). The line of action passes through the centroid of the submerged cross-sectional area.

c. Lateral Load - Loads acting against the trough sidewalls; specifically, those induced by differential water levels on either side of the trough walls. The maximum possible differential, existing when the trough is empty and the tank

is full, or, when the trough is full and when the tank is empty, shall be used when calculating deflection, fiber stress, etc.

d. Thermal Stresses - The troughs shall be designed to accommodate temperature induced stresses resulting from differences in coefficients of thermal expansion (contraction) between the trough and tank/support materials over temperature range of -10°F to 100°F.

e. Torsional Stability - The trough system shall be designed to resist torsional oscillations induced by the flow of water over trough edges. Any or all of the following trough stabilization techniques shall be considered:

1. Trough-to-trough stabilization
2. Torsional stiffness
3. Support spacing and rigidity
4. Internal baffles and/or flow straighteners

f. Deflection under Load - Maximum vertical deflection under full buoyant or gravity load shall be less than or equal to L/1000, where L is defined as the unsupported trough length in inches. Under no circumstances shall the maximum vertical deflection, measured at mid-point between trough supports, exceed 3/16".

g. Maximum trough sidewall horizontal deflection under full lateral load shall be less than or equal to D/100, where D is defined as the trough depth, in inches. Under no circumstances shall the maximum bottom deflection exceed 3/16".

h. Trough bottom deflection (oil canning) under full buoyant or gravity load shall be less than or equal to W/100, where W is defined as the trough width, in inches. Under no circumstances shall the maximum bottom deflection exceed 3/16".

i. Thermal Expansion/Contraction - The troughs shall be designed to accommodate a thermally induced expansion (contraction) of 1/8" per 20 ft. length of trough over temperature range of -10°F to 100°F, without exceeding the deflection or strain limitations set forth in the preceding sections.

j. In addition to AWWA F101-96, the design should include critical buckling load calculations for the trough cross braces or spreaders. This calculation is required to ensure that the cross braces do not approach the critical Euler column buckling load when the trough is empty and the tank is being filled, thereby placing the braces in compression.

k. The blind or closed end of the trough is anchored to the wall with 3/8” thick FRP spacer washers to allow for thermal expansion along the length of the trough. Using the thermal excursion as specified in AWWA F101-96,

maximum thermal displacements will be calculated and applied to the mounting area on the blind end to determine plate bending stresses. The plate thickness will then be calculated so that stresses do not exceed the level set forth in the AWWA spec.

4.6 **Materials**

a. The trough laminate shall meet the following minimum physical and mechanical requirements:

Table 1. Laminate Mechanical and Physical Properties

Property	Test	Value
Tensile Strength	ASTM D-638	18,000 psi
Flexural Strength	ASTM D-790	28,000 psi
Flexural Modulus	ASTM D-790	1.08×10^6 psi
Barcol Hardness	ASTM D-2853	40
Notched Izod	ASTM D-256	13 ft-lbs/in
Water Absorption	ASTM D-570	0.08%

b. Resin - The resin shall be a commercial grade isophthalic polyester thermosetting resin, Corezyn COR75-AQ-010 or equivalent, which has either been evaluated in a laminate, or which has been determined to be acceptable for use in a waste treatment plant environment.

c. Fillers: The resin shall contain no fillers. Thixotropic agents for viscosity control are acceptable. Colorants which have been determined by at least five years previous service to be acceptable for the service condition are acceptable. The standard color for the trough shall be green. Ultraviolet stabilizers are required in all trough laminates. Catalysts, accelerators and/or promoters shall be added to provide complete cure of the laminate and must meet the physical properties as indicated in Article 4.6 Table 1.

d. Ultraviolet Resistance - Ultraviolet resistance is required in all laminates exposed to ultraviolet light, whether it be in the form of pigmentation or ultraviolet absorbers or a surface veil.

e. Metal Reinforcement - When metal reinforcements are used, they shall be free of rust, oil and any foreign matter. They shall be completely encapsulated with a minimum of 1/8" thick laminate.

f. Glass Mat Reinforcement - Glass mat reinforcement shall consist of chemically bonded surfacing mat and chopped strand or chopped strand mat as hereinafter described. Surfacing mat shall be 0.020 inches thick reinforced with a surfacing mat of Type C veil, 10 to 20 mils thick, with a silane finish and a styrene-soluble binder compatible with the resin; the glass content of this layer

shall not exceed 20% by weight. Chopped strands shall be Type E glass, with silane finish and styrene-soluble binder.

g. Woven Roving Reinforcement - The finished laminate shall include one layer of 24-ounce woven roving reinforcement over the entire trough surface.

h. The content of the finished laminate shall be adequate to produce mechanical and physical properties conforming to Article 4.6 Table 1.

i. Other Reinforcement – Additional reinforcement in the form of foam or balsa sheet for high stress areas at the sides and bottom of the trough shall be completely encapsulated within the laminate. Care shall be taken to ensure that these areas of the trough laminate are not designated as attachment points or drilled for any purpose.

j. Laminate Construction
   1. Inner trough surface shall be a resin rich layer 0.020 inches thick reinforced with a 10-20 mil 'C' veil surfacing mat. This resin rich layer shall contain less than 20% by weight of the reinforcement veil. A gelcoat interior surface may be provided.

   2. Structural layers shall consist of plies of chopped strand mat with a maximum of 2 ounces per square foot per spray-up pass. Inter-layered between two layers of mat shall be one layer of 24-ounce woven roving over the entire trough structure. Each successive pass of reinforcement shall be thoroughly wetted with resin and shall be well rolled to exclude all air pockets and bubbles prior to the application of additional reinforcement.

   3. Outer trough surface shall consist of a resin rich layer not less than 0.020 inches thick. The outer layer resin shall be applied after cure of the structural layer and suitably embed all reinforcing fibers.

   4. Finished trough shall be a minimum of 30% fiber reinforced with a minimum thickness of not less than 1/4". The laminate tolerance thickness shall be ±10%.

k. Materials used in the manufacture of the FRP troughs shall be new stock of the best quality and shall be free from all defects and imperfections that might affect the performance of the finished product.

4.7 **Design and Manufacture**

a. The inner surface of the trough shall be smooth and resin rich. The outer surface shall be reasonably smooth, resin rich, and no glass fibers shall be exposed. The size and number of air bubbles shall be held to a minimum.

Laminations shall be dense and without voids, dry spots, cracks or crazes.

b. The top edges of the trough shall be level and parallel with a tolerance of plus or minus 1/8" (measured when the trough is not loaded).

c. The length of a trough section shall have a tolerance of ± 1/8" per 10 ft. length.

d. Horizontal stiffening flanges shall be integrally molded along the top edge of each trough side. These flanges shall be 1" to 3" wide, depending upon the trough configuration and shall face outward.

e. Thickness at locations of supports such as saddles shall be at least 1-1/2 times the nominal thickness of the trough and shall conform to the fiber stress limitations set forth in Section 4.5.

f. End flanges, where required to bolt trough sections together, and blind ends for securing to a wall, shall be a minimum of 1-1/2 times the nominal thickness of the trough.

g. An integrally molded water stop shall be provided on the trough whenever the trough is grouted into and/or passes through a wall.

h. Horizontal stiffeners shall be provided across the width of the trough to increase the structural rigidity of the trough system. The stiffeners shall be 1" diameter PVC pipe with an internal 1/2" stainless steel rod threaded on both ends and fastened through the trough walls on 2-foot centers.

i. All FRP flanges shall require stainless steel backer plates to provide additional strength and distribute compressive forces from fasteners.

j. After fabrication, all cut edges, holes and abrasions shall be sanded smooth and sealed with a compatible resin coating to prevent the intrusion of water.

4.8 **Trough Supports and Hardware**

a. Existing galvanized steel I-beam support structures shall be removed and replaced by the CONTRACTOR with support structures suggested by trough manufacturer. FRP baffles shall be recovered from existing I-beam supports and fitted to new support structures.

b. All trough mounting hardware shall be Type 316 stainless steel and shall be supplied by the trough manufacturer.

4.9 **Trough Installation**

a. CONTRACTOR shall install troughs and supports in accordance with

manufacturer's instructions and approved shop drawings.

b. Field cutting of troughs is allowed if necessary. All field cut edges and field drilled holes shall be sealed per the manufacturer's instructions.

c. MANUFACTURER shall provide as part of the installation instructions a recommendation for sealing any interior gaps in the trough walls and floor at seams or wall attachment points.

d. CONTRACTOR shall ensure that troughs and supports are installed plumb and true, free of warp or twist, within the tolerances specified by the MANUFACTURER and as shown on the drawings.

e. After the MANUFACTURER has approved the installation, and prior to startup, the CONTRACTOR shall clean all surfaces in accordance with the manufacturer's instructions.

4.10 **Trough In-Line Slide Gates**

a. Each large (24"Wx36" D) trough installed in Clarifier No. 2 shall be fitted with guides for an in-line slide gate on at the easternmost end, per the project plans (Bypass Gate Details on PL-1), to allow flow to be diverted from the channel during installation of the troughs in Clarifier No. 1. These in-line slide gates and guides shall be fabricated and installed by the MANUFACTURER.

b. Guides shall be constructed of ¾"x¾"x¼" FRP angle bracket, 18" long, mounted vertically, with the top flush with the top of the trough. A 6" long guide shall be installed centered in the bottom of the trough.

c. Slide gate shall be constructed of ¼" aluminum, 24"x36", with bottom corners rounded to conform to the shape of the channel. A ½" rubber gasket shall be mounted on the perimeter of the gate to assist in sealing.

d. Gates shall be designed to allow no more than 1 gal/min leakage.

e. Any modifications of the bypass gate or guide design deemed necessary by the MANUFACTURER shall be pre-approved by the ENGINEER prior to fabrication of troughs and gates.

ARTICLE 5- SPECIAL REQUIREMENTS – UNDERDECK EQUIPMENT TO BE SUPPLIED TO MSD BY BRENTWOOD INDUSTRIES

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BUDGETARY PROPOSAL #WG08568	ASHEVILLE, NC - WWTP - INTERMEDIATE CLARIFIERS 1, 2 & 3 REFURBISHMENT

March 20, 2025

Attn: Shaun Armistead
MSD of Buncombe County
2020 Riverside Drive
Asheville NC 28804

Phone: 828-225-8269
email: ShaunA@msdbc.org

Re: Asheville, NC - WWTP - Intermediate Clarifiers 1, 2 & 3 Refurbishment
Polychem™ Chain and Flight Sludge Collection System

POLYCHEM SOLUTIONS PROPOSAL

Brentwood Industries, Polychem Brand, proposes and offers to supply all materials and services as an Approved manufacturer and in general accordance with Brentwood's standard practices and specifications, clarifications, and information provided.

TECHNICAL SPECIFICATION(S): N/A

SECTION(S): N/A
ADDENDA RECEIVED: N/A

BRENTWOOD PROPOSES TO FURNISH POLYCHEM CHAIN AND FLIGHT EQUIPMENT AS FOLLOWS:

Six (6) Longitudinal Collector Mechanisms, Approximately
139.5 FT Long x 16 FT Wide x 12 FT AWD, 3 Shaft System
and
Three (3) Cross Collector Mechanisms, Approximately
33.5 FT Long x 5 FT Wide x 16.5 FT AWD, 3 Shaft System

Please note this proposal is based upon the evaluation of Clarifier #4 and the corresponding Polychem Solutions field report. This should also be considered representative of the existing conditions in Clarifiers 1, 2 and 3 as it is of a similar configuration and vintage.

This proposal has been prepared as a complete Polychem Solutions package and is optimized to address your specific needs. It incorporates project level cost savings where applicable. If line item pricing is required, please understand that additional time will be required and individual prices will result in an increased overall price to account for item specific packaging fees and freight premiums.

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BUDGETARY PROPOSAL #WG08568	ASHEVILLE, NC - WWTP - INTERMEDIATE CLARIFIERS 1, 2 & 3 REFURBISHMENT

MANUFACTURER'S REPRESENTATIVE:
Please direct all questions regarding this proposal to Brentwood's local area sales representative:

Contact: Paul Jackson

Representative: Interstate Utility Sales, Inc.

Address: PO Box 1506
Matthews NC 28106
USA

Phone Number: (704) 367-1970

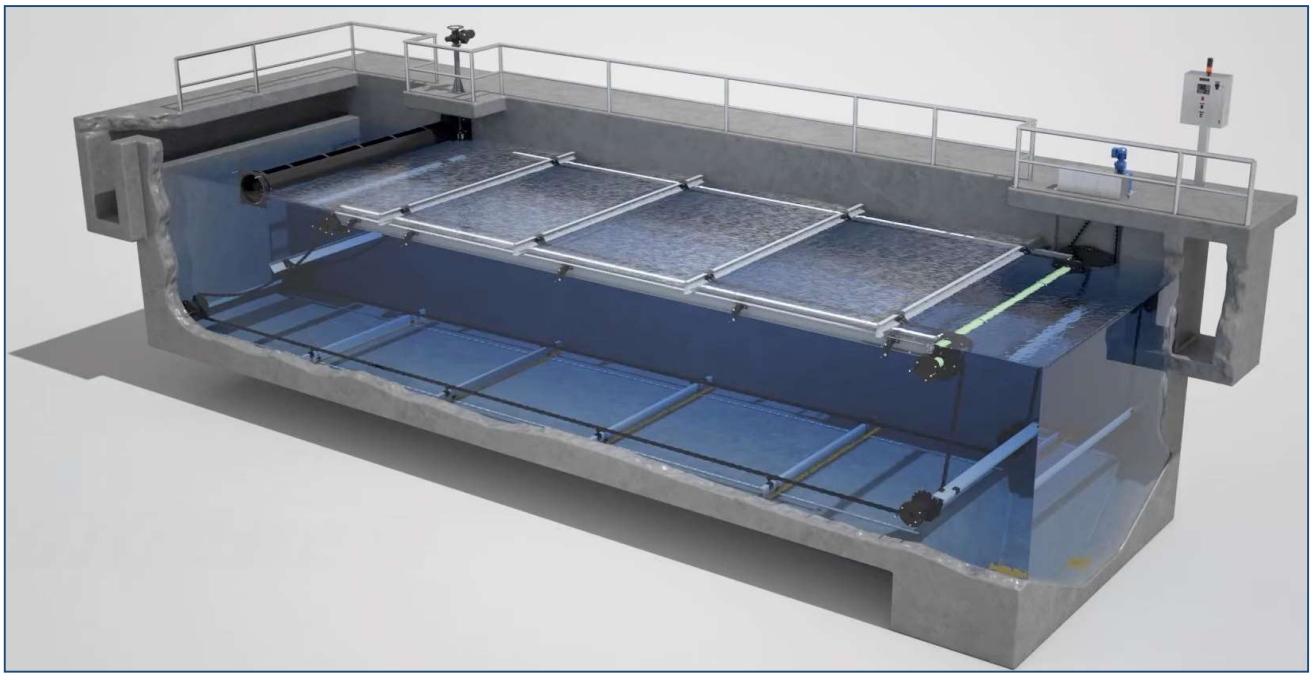
Email: pjackson@iusinc.com

BRENTWOOD REGIONAL SALES MANAGER:

Contact: Bill Dixie

Phone Number: (610)-347-9098

Email: bill.dixie@brentwoodindustries.com



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BUDGETARY PROPOSAL #WG08568	ASHEVILLE, NC - WWTP - INTERMEDIATE CLARIFIERS 1, 2 & 3 REFURBISHMENT

***ITEMS INCLUDED:**

COLLECTORS & GENERAL ITEMS	DESCRIPTION / MATERIAL
Drive Chain	NH78, Reinforced Nylon Resin w/ GritShield 301 SS Barrel Wrap and 303 SS Pins
Collector Chain Pins and Retainer Clips	Glass Reinforced Nylon Pins w/ Acetal Retainer Clips
Collector Chain Links	NCS-720-S, Reinforced Thermoplastic Polyester Resin w/ GritShield 301 SS Barrel Wrap
Half Links	NCS-720-S, Reinforced Thermoplastic Polyester Resin, 3-inch Pitch, w/ GritShield SS Barrel Wrap
Flight Attachment Links	NCS-720-S, Reinforced Thermoplastic Polyester Resin w/ GritShield 301 SS Barrel Wrap, F-22-8
Flights (Longitudinal Collectors)	3"x8" nominal C-Channel w/ Integral Lip, Fiberglass Reinforced Plastic, spaced at 10 Ft (3.05 m) intervals
Flights (Cross Collectors)	3"x8" nominal C-Channel w/ Integral Lip, Fiberglass Reinforced Plastic, spaced at 5 Ft (1.52 m) intervals
Wear Shoes	Nylon 6-6
Hardware	316 SS
Flight Squeegee Assemblies (2 Per long)	Neoprene w/FRP Backing and 316 SS Hardware
Fillerblocks	Polypropylene
Headshaft Spindles	Cast Nylon-6
Headshaft(s) - TrueSpan Field Adjustable	Biaxially Wrapped Fiberglass Epoxy Tube(s) w/ Internal UHMW-PE Tubular Bearings
Headshaft(s)	Biaxially Wrapped Fiberglass Epoxy Tube(s) w/ Internal UHMW-PE Tubular Bearings
Driven Sprocket(s)	NH78, 40T, Cast Nylon-6, w/integral teeth
Collector Sprockets for Headshaft(s)	NCS-720-S, 23T, Cast Nylon-6
Shaft Couplings	Fiberglass, Pre-drilled
Beaded Bushing Keys	Nylon
Collector Sprockets for Idler Shafts	NCS-720-S, 17T, Cast Nylon-6
Static Shaft Sleeve Bearing	UHMW-PE, Split, w/316 ss Clamping Bands

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BUDGETARY PROPOSAL #WG08568	ASHEVILLE, NC - WWTP - INTERMEDIATE CLARIFIERS 1, 2 & 3 REFURBISHMENT

***ITEMS INCLUDED (Continued):**

COLLECTORS & GENERAL ITEMS	DESCRIPTION / MATERIAL
Wall Bracket Supports for Return Track	Glass Reinforced Nylon 6-6
Run Shoe to Splice Wall Bracket to Return Track	Nylon 6-6
Return Track	3"x8" nominal C-channel, Fiberglass Reinforced Plastic
Wear Strip	UHMW-PE - 1/2" thick x 2-5/8" wide
Chain Tightener(s) for Drive Chain	Nylon 6-6 7T Sprocket w/ Cast Nylon-6 Arm and FRP Adjustable Mounting Bracket
Anchor System	316 SS
Adhesive for Anchors w/ Dispenser	Hilti
*	Above Item Descriptions/Materials may vary slightly after engineering and consultant review.

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BUDGETARY PROPOSAL #WG08568	ASHEVILLE, NC - WWTP - INTERMEDIATE CLARIFIERS 1, 2 & 3 REFURBISHMENT

The following total estimated spare parts will be furnished for this project. After engineering, quantities may vary from quantities listed below. Spare Parts will be packaged separately and plainly identified.

SPARE PARTS INCLUDED	
QTY	**DESCRIPTION**
20	feet of drive chain
10%	of all collector chain furnished
10%	of all chain-to-flight attachment links furnished
5	longitudinal flights complete with wear shoes, fillerblocks, and hardware
5	Cross Collector Flights complete with wear shoes, fillerblocks, and hardware

ITEMS SPECIFICALLY NOT INCLUDED	
1	Idler Shafts and Wall Bearings
2	Limit Switch(es) and Support(s)
3	Drive Sprocket Assembly / Torque Overload Protection Device
4	Drive Unit Motor and Reducer
5	Base Plate for Drive Unit
6	Chain Guard
7	SmartGuard Flight and Sprocket Monitoring System
8	Rotating Scum Troughs or Helical Skimmers
9	Control Panel(s)
10	Effluent Troughs, Weirs, Baffles
11	Seismic Calculations
12	Hold Down Rail, 304 SS
13	Tank Measurements
14	PE Stamp of Submittals

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BUDGETARY PROPOSAL #WG08568	ASHEVILLE, NC - WWTP - INTERMEDIATE CLARIFIERS 1, 2 & 3 REFURBISHMENT

Brentwood meets or exceeds the specification as written except for items listed in the below table. Brentwood offers the following clarifications and/or deviations to the specification

	CLARIFICATIONS
	Based upon Brentwood's engineering review, the in-tank laser scan of Clarifier #4 correlates with the as-built drawings provided for all intermediate clarifiers. It was also confirmed by email that Basins 1&2 are mirror images of basins 3&4. The proposed scope reflects the scope provided for Clarifier #4 on Project WGZ0083400 and measurent scan trips are not included.
	During the field service trip for contractor installation oversight on Clarifier #4, it was identified that drive chain tighteners required replacement to ensure proper operation of the new equipment and they were purchased. Please note new drive chain tightener assemblies are included in this scope.
	It was also discussed during the field service trip that carbon steel flat bars are welded to the top of T-rails on the tank floor and some project higher than the new wear strip. It was previously discussed the plant/contractor would remove the existing steel flat bar and install the new wear strip directly to the tank floor to avoid clearance issues prior to startup.
	The concrete floor was observed to be uneven at several points during the field service visit and based on the original recommendation in the evaluation report, two squeegee flight assemblies per longitudinal collector are also included in the scope.
	Please note three separate field service trips are included for final inspection and startup. An additional trip is included and can be utilized as needed.
	The estimated freight is based on all equipment shipping at the same time.
	Installation oversight can be quoted upon request to the installing contractor. It is recommended to allow for one trip with two or three days on site.

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Clarifications (continued)

	CLARIFICATIONS
	This page left blank for future reference as needed.

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EXISTING CONCRETE STRUCTURE (IF APPLICABLE):

Pricing and schedule are based on limited structural information provided at the time of quotation and assume the necessary existing tank dimensions will be provided by purchaser in a timely manner to facilitate the start of submittals. In lieu of customer supplied tank dimensions, purchaser may elect to procure Brentwood's Tank Measurement services. Should the verified tank dimensions and equipment conditions differ from the information provided for quotation, and/or require special bracketry or supporting structures, Brentwood reserves the right to revise pricing and schedule accordingly. Delays associated with receipt of complete tank measurements, incomplete information from RFI's, and release and approval to manufacture may result in changes to the price and schedule.

TANK MEASUREMENTS:

Tank Measurements are NOT included in this price or proposal, but can be provided and billed per attached published field labor and expense rates. If measurement services are purchased, Brentwood will require the assistance of one (1) person while on site to support tank measurements, and tanks must be completely drained and cleaned before entrance. In addition, customer / contractor shall supply all necessary equipment to safely access tanks (ladders, lighting, etc.). Tank measurement services require a minimum 2 week notice and are based on technician availability.

SUBMITTALS:

Based upon the budgetary nature of this proposal, submittals are not included in the price. In the event that the scope of any options and delivery can be refined, lead time and pricing for any requested submittals will be included in future revisions.

TIME AND DELIVERY:

1. Brentwood will advise the current engineering lead time required to review existing structural and equipment information, design equipment layout within the tank, and develop a bill of materials after receipt of a purchase order.
2. We further propose to furnish the equipment approximately eighteen (18) weeks after receipt of required dimensions and completion of engineering work which will constitute release to manufacturing.
3. Final lead time will be confirmed after receipt of executed purchase order and order is fully processed.

FREIGHT:

Freight allowed, best way, point of manufacture to job site. Requests for specific methods of shipment will be at requestors' expense. On-site transportation, unloading, and storage costs by others.

WEIGHT AND VOLUME:

Estimated weight is 31,700 Lbs. Estimated volume is Two (2) Truck(s).

TAXES:

Pricing does not include any States' sales tax if applicable, unless otherwise stated.

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SCHEDULE OF VALUES & PAYMENT TERMS:

1. 100% Net 30 Days from i)shipment of material or ii) Seller's notification to Buyer of finished materials ready for shipment & being held at Brentwood's facility beyond scheduled shipment date, whichever occurs first.
2. These terms are not contingent upon or in conjunction with any agreement purchaser has with other parties.
3. For Brentwood Water & Wastewater Standard Terms and Conditions visit: https://www.brentwoodindustries.com/terms/

ESCALATION:

The price(s) quoted are subject to adjustment to reflect increases in material cost(s), should these increases in price exceed 3% during the specified Schedule of Construction. Increases are based on price indexes for PVC (ChemData) and Stainless Steel (MEPS International), which can be provided upon request. It is understood and agreed that it will be Brentwood's option whether to invoke escalation, should the price exceed this amount.

BILL AND HOLD:

If Purchaser fails to take delivery on any scheduled delivery date based on the terms of the executed purchase Agreement, Brentwood reserves the right to reallocate any Product to other projects and reschedule production for the delayed Product. Purchaser will be required to accept any increase in price associated with the repurchase of material to fulfill the purchased Product requirements and the Product Delivery Date will be rescheduled in conjunction with current production schedules.

If the Purchaser requests that Brentwood holds Product in excess of an agreed upon delivery date and Brentwood agrees to hold the Product, Purchaser will provide written notification to Brentwood to store the Product at its facilities for a period of time prior to shipment ("Bill and Hold"). Brentwood will provide written confirmation of the Bill and Hold to Purchaser, including a Statement of Transfer of Title and invoice.

Payment for the Bill and Hold material is due in accordance with the agreed upon terms in the executed purchase Agreement except to the extent dates must be adjusted due to delivery rescheduling, in which case adjusted dates will be shown on the invoice. All payments will be made in accordance with the invoiced payment terms and instructions. For all Bill and Holds, Purchaser acknowledges that (i) they have made a fixed commitment to purchase the Product, (ii) risk of ownership for the Product passes to Purchaser upon signing Statement of Transfer, (iii) Purchaser has requested that the Product be on a Bill and Hold basis for legitimate business purposes, (iv) if no delivery date is determined at the time of invoicing and Statement of Transfer and Brentwood does not receive a request for delivery within two (2)months from the Bill and Hold invoice date, Brentwood has the right to release the shipment upon written notice to Purchaser any time following the two (2) month period from Bill and Hold invoice date. Brentwood shall be entitled to storage charges of 1 ½% per month of the purchase value of stored material beginning 30 days after Bill and Hold invoice date and continuing until the Product is picked up by Purchaser or shipped by Brentwood. Upon receipt of request from Purchaser to ship the stored Product, Brentwood shall use commercially reasonable efforts to ship the Product within two (2) to 4 (four) business weeks following confirmed receipt of such request.

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VALIDITY:

This proposal is valid for a period not to exceed 90 days from latest date shown above unless extended by Brentwood in writing. Pricing on this project is based upon shipment schedule as shown above. Extensions to delivery timelines or requests for staged shipments may require renegotiation of pricing.

FIELD SERVICE STARTUP AND TRAINING:

The services of a qualified Brentwood field technician is included to assist in inspection of installed equipment, startup and field testing, certification, and operator training, if required by specification. Duration limited to Four (4) trip(s) for Five (5) man-day(s) on site total. Non use of contractual field service days does not generate a credit on this project. Field service requires a minimum 2 week notice and is based on technician availability. Less notice may be accommodated with additional costs.

OPERATION AND MAINTENANCE MANUALS:

One (1) digital copy of our non-site specific O&M manual will be furnished on or before shipment of equipment. Digital copy can be downloaded from our FTP site or furnished on a USB Flash drive. Digital copy of O&M shall be in Adobe pdf format and be locked and uneditable.

WARRANTY:

Brentwood warrants material supplied on this project to be free from defects in workmanship or materials for a period of twelve (12) months from date of certification by an authorized Brentwood representative or eighteen (18) months from date of shipment, whichever shall occur first. Warranty excludes labor to install or remove parts. Chain and flight system is designed for continuous operation, and intermittent operation is not recommended due to potential for excess sludge build up. Damage resulting from intermittent operation of chain and flight equipment is not covered under this warranty.

PAINTING AND COATINGS:

Stainless Steel and plastic equipment shall not be painted. Unless otherwise specified, all ferrous wetted components will be provided with a surface preparation of SSPC-SP10 Near White Metal and a shop primer 1 coat of Sherwin Williams Dura-Plate 235 Multi-Purpose Epoxy @ 4 Mils D.F.T. It is the responsibility of the contractor to ensure finish paint is compatible with specified primer. Any adhesion issues between coats are not the responsibility of Brentwood. The top coat must be applied within 6 months of the prime coat, otherwise the assembly surface will need to be abraded or the primer will need to be removed and surface preparation redone prior to application of the top coat, by others. OEM components above deck (drive units, bearings, actuators, etc.) shall be furnished with manufacturer's factory finish.

AMERICAN IRON AND STEEL ACT:

Per Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014, Brentwood's Polychem brand clarifier System and accessories is considered a mechanical system and is not considered construction material or structural steel subject to AIS requirements.

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GENERAL EXCLUSIONS*:

1. Foundations, supports for Polychem equipment (diaphragm plates) or special mounting plates.
2. Bid, performance, supply, or maintenance bonds.
3. Installation of equipment and anchor systems, concrete, sealing compounds, shim stock or grout.
4. Grouting behind return track wall brackets is not included, but is required for these systems.

5. Tools or spare parts (unless listed elsewhere in this Proposal).
6. All reducer oil, bearing grease, or other lubricants.
7. Field paint, touch-up, finish painting, or finish coatings.
8. Unloading, hauling, erection, and storage of equipment.
9. Grease line piping (unless listed elsewhere in this Proposal) or grease guns.
10. Any electrical components or controls not shown in items included section of this Proposal.
11. All control panels (unless listed elsewhere within this Proposal), unistrut supports / mounting for control panels, electrical conduit, wires, or wiring, wire fittings, or boxes.
12. Wall Sleeves for scum troughs, weirs, baffles, overflow weirs, effluent troughs.
13. Anchor pull out testing.
14. PI&D drawings
15. Conduit sizing or drawings.
16. Detailed specific storage plans or maintenance schedules for installed equipment outside of Brentwood's standard maintenance and preventative maintenance information.
17. Factory assembly of components.
18. Any component shown or described on a drawing and not included in the Items Included section of this Proposal, or any component or service not shown in this Proposal.

**unless above items are listed as included elsewhere in this Proposal, they are excluded.*

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FIELD SERVICE RATES

EFFECTIVE
2022 - 2025

Domestic Daily Rates per 8 Hour Day

SERVICE SPECIALIST	2022	2023	2024	2025
Straight Time	$1,890.00	$2,003.00	$2,123.00	$2,250.00
OT and Saturday	$2,827.00	$2,996.00	$3,175.00	$3,365.00
Sunday and Holiday	$3,780.00	$4,006.00	$4,246.00	$4,500.00

International Daily Rates per 8 Hour Day

SERVICE SPECIALIST	2022	2023	2024	2025
Straight Time	$2,268.00	$2,404.00	$2,548.00	$2,701.00
OT and Saturday	$3,402.00	$3,606.00	$3,822.00	$4,051.00
Sunday and Holiday	$4,538.00	$4,810.00	$5,099.00	$5,404.00

Definition of Labor Rates

Straight time applies to first eight (8) hours worked and traveled Monday through Friday. Any time worked over 8 hours, up to four (4) hours worked and traveled past eight (8) on Monday through Friday, first twelve (12) hours worked on Saturday will be charged at overtime rate. Standby time will be charged at the applicable rate. In case of long-term assignments, Field Service personnel will be rotated at Buyer's expense.

Expenses

Meals, lodging, and incidental expenses will be billed at cost + 15%. Employee travel expenses will be charged at cost +15% for airfare, rental vehicles, taxis and freight. Mileage rate is $0.95 per mile. Rental of lifting or other special equipment, outside inspection services, additional sub contracted services, etc. will be cost +15%.

Notes:

1. This rate sheet supersedes all previously issued rate sheets.
2. All prices in US dollars.
3. Any "site-specific" training required will be billed as time worked.
4. Customer to furnish water, oils, solvents and will dispose of same. Customer will also furnish power and air, parts, ladders, access to job-site, overhead crane upon request, and all necessary work permits.
5. Rates are "Portal-to-Portal". Travel time, to and from the site, will be considered hours worked and billed at the applicable rate.
6. Stand-by time will be considered hours worked and billed at the applicable rates according to the following:
   a. Stand-by from home base – 8 hours per day.
   b. Stand-by while mobilized and in the field – 8 hours per day.
7. A 4-hour minimum will apply to all service work.
8. Rates quoted are subject to adjustment without notice to conform to Seller's published rates in effect at the time service is performed.
9. This offer is subject to Buyer's acceptance of the Conditions above.
10. This offer and any work performed as a result are exclusively governed by our Terms and Conditions attached. Any additional or conflicting terms contained in any document or purchase order issued authorizing work are expressly objected to in advance and shall not apply, except with the express written consent from Brentwood Industries.