HIGHFILL

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To:	Prospective Bidders	**Copies:**	
Date:	March 8, 2024	**Proj. No.:**	SUR2201
Subject:	Addendum No. 4 Surf City WWTF Digester/Sludge Holding Tank Surf City, NC Owner: Town of Surf City		

ADDENDUM NO. 4

BID DATE: March 14, 2024 @ 2:00 PM

Item 1.1: See Addendum 3 - Item 1.2. Delete in its entirety and replace with the following:

Construction Specification Section 46 73 21 – Aerobic Digester Aeration Equipment, Paragraph 2.8: Replace "Horsepower: 60 HP" with "Horsepower 125 HP"

Item 1.2: Aerobic digester equipment supplier shall provide variable frequency drive (VFD) compatible with the 125 HP blower. VFD shall be installed adjacent to blower package at Aerobic Digester and rated for environmental conditions.

Item 1.3: Decanter tank pumps shall be provided with NEMA rated across the line motor starters in-lieu of soft starters.

Item 1.4: See attached design clarification for the proposed Aerobic Digester.

No further changes at this time.

Please acknowledge receipt of this Addendum in the space provided in the Bid Form. Failure to do so may constitute grounds for the rejection of your Bid.

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.

Jeffrey Ray, P.E.

Attachments: Design clarification for the proposed Aerobic Digester.

Surf City WWTF Proposed Digester – Sludge Holding Tank Addendum 4
March 8, 2024

The worst case oxygen requirement is 2,652.5 pounds per day (ppd) for the proposed new 540,400 gallon volume sludge digester and holding tank. The air required to add this much oxygen at standard conditions and 10% transfer efficiency is 1,054.5 cubic feet per minute (cfm). Using an oxygen transfer efficiency of 20% reduces the air required at standard conditions down to 527.25 cfm. However, using a design safety factor of 2.0 to determine the blower size, the new blower capacity should be 1,150 cfm.

The air provided for oxygenation above delivers only about 36.5% of the minimum typical mixing air needed (20 cfm / 1,000 cubic feet). The remainder of the mixing energy needed is obtained by use of a 5,157 gallon per minute (gpm) water jet. At a total dynamic head of 26 feet of water, this equates to about 33.86 horsepower (hp) of energy imparted to the water. In this case, the water jet alone provides about 62.7% of the minimum typical mixing needed (0.75 hp / 1,000 cubic feet).

Should another vendor choose, for instance, to use diffused air to provide both oxygenation and mixing, then mixing will control. The minimum acceptable diffused air mixing required will be no less than 20 cfm / 1,000 cubic feet.