



AGENDA ITEM SUMMARY FORM

MEETING DATE: July 14, 2026

PREPARED BY: Hector Renteria

AGENDA CONTENT: Discussion and possible action on accepting the Oyster Creek WWTP Desing Review and give direction on a path forward on improvements..

AGENDA ITEM SECTION: Regular Agenda

BUDGETED AMOUNT: **FUNDS REQUESTED:**

FUND:

EXECUTIVE SUMMARY:

Council has requested HDR continue to refine the OPCC for the WWTP improvements. HDR has continued to work with local contractors and has adjusted the OPCC accordingly. A PowerPoint presentation will be provided to discuss the project and its associated cost.

RECOMMENDATION:

City to provide HDR direction on how it would like to proceed forward with the project.



Design Review and Opinion of Probable Construction Cost - Angleton Wastewater Treatment Plant

City of Angleton

Di

June 23, 2026



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1 Executive Summary

The City of Angleton requested that HDR evaluate options and opinions of probable construction costs (OPCC) for the following projects at its wastewater treatment plant.

- Blower Assessment – consisting of evaluating air requirements versus blower capacity, blower condition, and recommendations if new blowers are needed.
- Air Diffuser Replacement – consisting of evaluating options for replacing the existing air diffusers to improve performance.
- Expansion of the onsite reuse system – comprised of expanding the existing reuse system to include the entire plant except where potable water is required.
- Blower Relocation – including options and OPCC for elevating the blowers out of the floodplain.

The findings of this report are as follows:

Table 1 – Summary of Recommendations

Task	Recommendation
Blower Assessment	The four existing blowers provide sufficient capacity and redundancy. Significant upgrades have been done over the last decade, so no blower replacement is necessary.
Air Diffuser Replacement	The recommended selection is to use Sanitaire Silver Series LP membrane disc diffusers. They offer optimum oxygen transfer efficiency, maximize treatment capacity, and reduce the amount of air required.
Reuse System Expansion	The recommendation is the addition of an additional reuse pump near the chlorine contact chamber and make relatively easy adjustments to the potable water and reuse piping systems.
Blower Relocation	The recommendation is to construct a new elevated blower building adjacent to the aeration basins. The other options evaluated are less attractive due to aging concrete under and adjacent to the existing blower building.

The OPCC for these recommendations are as follows. These include all construction, engineering, and construction management costs.

Table 2 – Summary of OPCC Cost Estimates

Task	OPCC	Comments
Blower Assessment	No Cost	Reuse existing blowers
Air Diffuser Replacement	\$55,000	
Reuse System Expansion	\$869,000	The recommendation is the addition of an additional reuse pump near the chlorine contact chamber and make relatively easy adjustments to the potable water and reuse piping systems.
Blower Relocation	\$2,760,000	Includes new elevated building, electrical, and relocation of existing blowers,
TOTAL OPCC	\$3,684,000	

Details of the air diffusers, as well as extensive detail on the cost estimating on the new blower Building are included in appendices.

2 Introduction

The City of Angleton requested that HDR evaluate options and opinions of probable costs (OPCC) for the following projects at its wastewater treatment plant.

- Blower Assessment – consisting of evaluating air requirements versus blower capacity, blower condition, and recommendations if new blowers are needed.
- Air Diffuser Replacement – consisting of evaluating options and OPCC to replacing the existing air diffusers for improved performance.
- Expansion of the onsite reuse system – comprised of expanding the existing reuse system to include the entire plant except where potable water is required.
- Blower Relocation – including options and OPCC for elevating the blowers out of the floodplain.

Data from past HDR projects, including a plant condition assessment, were utilized and combined with additional information from site visits and consultation with operating staff. In addition to using our engineers and licensed operators, we used professional cost estimators to develop the OPCC for the new blower building. The blower building is the most complicated component of this project.

3 Blower Assessment

3.1 Aeration Requirements

The existing aeration system is comprised of two sections: One section is supplied by the 3 blowers in the blower building. The other is supplied by the blower adjacent to the existing digester. The two sections are interconnected for redundancy, but a valve between the two is normally closed. This is to better balance air flow because the two sections have different pressure requirements.

The air demands are presented below for each of the two sections.

3.2 Air Demands from Blower Building

3.2.1 Aeration Basin Air Demand

There are two aeration basins at the WWTP. Each basin is: 80' long x 48' wide x 23' of side-water depth (SWD). The aeration basins were designed for the oxidation of biochemical oxygen demand (BOD) as well as nitrification of ammonia (NH₃). Therefore, the air blowers must be sized to provide enough oxygen to facilitate these biological processes. Table 3 below shows the influent wastewater characteristics used to estimate aeration basin air requirements. The influent data is from April 2018 through March 2021.

Table 3 Estimated Annual Average Influent Flow and Loading Conditions

Annual Average Influent Wastewater Characteristic	Value
Flow Rate (Q _{aa})	3.6 MGD
5-day BOD Concentration (BOD _{5aa})	150 mg/L
NH ₃ -N Concentration (NH ₃ -N _{aa})	30 mg/L
5-day BOD Loading (P _{BOD5aa})	4,504 lb BOD ₅ /day
NH ₃ -N Loading (P _{NH3-Naa})	901 lb NH ₃ -N/day

It is vital that air blowers have the capacity to provide an adequate supply of air in higher flow conditions. Therefore, to be conservative, the air supply requirements of the aeration basins were estimated based on maximum month conditions. Maximum month conditions were estimated by applying an assumed max month peaking factor of 1.4 to the annual average influent conditions listed above. The resulting maximum month influent wastewater characteristics are summarized in Table 4 below.

Table 4 Estimated Maximum Month Influent Flow and Loading Conditions

Max Month Influent Wastewater Characteristic	Value
Flow Rate (Q _{mm})	5.0 MGD
5-day BOD Concentration (BOD _{5mm})	150 mg/L
NH ₃ -N Concentration (NH ₃ -N _{mm})	30 mg/L
5-day BOD Loading (P _{BOD5mm})	6,506 lb BOD ₅ /day
NH ₃ -N Loading (P _{NH3-Nmm})	1,261 lb NH ₃ -N/day

TCEQ Chapter 217.155(b) dictates the requirements for airflow to aeration basins in activated sludge plants. It contains formulae with variables such as basin size, diffuser submerged depth, as well as characteristics specific to proven laboratory data associated with the diffuser to be used.

The air flow required for aeration basins is extremely dependent on the type of diffuser, manufacturer and model. The variety of diffusers have a wide range of efficiencies in which they transfer air to the wastewater. , Sanitaire is one of the most common diffuser manufacturers used in the wastewater market. They provided us with an estimate of required air flow that is more aligned with the anticipated diffuser design. We provided loadings and basin sizes to Sanitaire, and they used a computer model to estimate the required air flow and the quantity of diffusers to be used. Their model was based on the SSLP model, one of the more efficient diffusers in the industry. The calculation methodology of their model closely resembles the requirements of TCEQ Chapter 217.155.

This yielded a maximum month air supply requirement of 3,300 standard cubic feet per minute (scfm) for the aeration basins.

3.2.2 Additional Air Demands

In addition to the two aeration basins, the aeration basin blowers also supply air to two return activated sludge (RAS) air lift pumps and two waste activated sludge (WAS) air lift pumps, The newer final clarifier No. 3 does not receive air. Table 5 below summarizes the air supply requirements of these process units.

Table 5 Aeration Basin Blowers Equipment Air Supply Requirements

Process Unit	Air Demand (scfm)
RAS Air Lift Pumps	120 (2 x 60 each)
WAS Air Lift Pumps	24 (2 x 24 each)
WAS Mixing	24
Total	168 scfm

Combining the estimated maximum month aeration basin air supply requirements and the air supply needs of the other equipment listed in Table 3, the total air supply demand related to the blower building blowers is approximately 3,468 scfm.

3.3 Air Demands from Digester Blower

3.3.1 Aerobic Digester Air Demand

The WWTP solids handling process includes four aerobic digestors with a total volume of approximately 65,000 cubic feet (CF) or 486,265 gallons. The digesters were designed to facilitate the biodegradation and stabilization of organic matter in waste sludge, post thickening in the gravity thickener. Further, aerobic digesters are designed for the biodegradation and stabilization, or digestion, process to occur under aerobic conditions. Therefore, the aerobic digester air blower must have the capacity to provide the required air for this process. Sludge mixing is another function of the air supplied to aerobic digesters. The air demand of the digesters is dictated by whichever is greater, the demand for the digestion process or mixing.

TCEQ has dictated a minimum air flow rate to aerobic digesters that cover both the mixing and digestion functions. 30 TAC §217.249 part (t)(7)(G) states that an aerobic digester must have a minimum of 20 scfm per 1,000 cubic feet of digester volume. With a volume of 65,000 cubic feet, the minimum air flow required is 1,300 scfm.

3.3.2 Other Air Demands

In addition to the aerobic digesters, the aerobic digester blower also supplies air to the gravity thickener, three thickened sludge air lift pumps, and the chlorine contact basin. Table 6 below summarizes the air supply requirements of these process units.

Table 6 Aerobic Digester Blower Equipment Air Supply Requirements

Process Unit	Air Demand (scfm)
Thickened Sludge Air Lift Pumps	24 (3 x 8 each)
Gravity Thickener	60
Chlorine Contact Basin	292
Total	376

Combining the estimated aerobic digester air supply requirements and the air supply needs of the other equipment listed in Table 4, the total air supply capacity of the aerobic digester blower is approximately 1,676 scfm.

3.4 Blower Capacities

The WWTP contains four centrifugal blowers. Three blowers are in the blower building, and the other is located near the digester. Under normal operating conditions, the blower near the digester provides air to the digester and the aeration basin. The three blowers in the blower building provide air to the aeration basins and 7 air lift pumps. There is an emergency interconnect between the two aeration systems that can be opened to improve redundancy.

Currently, there are no flow meters to accurately measure air flow to any part of the aeration system. Blowers in the blower building are able to estimate air flow using control panels which measure amp draw of the blower. This is converted to an estimated air flow rate in scfm. Not all the control panel displays were functioning correctly during our site visits.

The estimated flow rates of the blowers were generated using blower curves provided by City staff. These curves were used based on estimated pressure requirements from preliminary documentation provided by Sanitare diffusers. This documentation calculated that the required pressure required is 10.2 psi. The pressure requirement for the digester is 7 psi.

Based on this documentation, the capacity of each of the blowers is shown in the table below.

Table 7 Blower Capacities

Blower	Location	Capacity (scfm @ 10.2 psi)
No. 2 – Atlas Copco ZM082-09	Blower Building	1850 scfm
No. 3 – Atlas Copco ZM082-09	Blower Building	1850 scfm
No. 4 – Lone Star MC-9	Blower Building	1700 scfm
Digester - Continental	Digester	1825 scfm @ 7 psi

The air demands for the treatment plant are 3,468 scfm @ 10psi for the blowers in the blower building and 1,676 scfm @ 7 psi for the blower at the digester.

The blower building has three blowers. At 10 psi, two blowers produce 1,850 scfm and the other generates 1,700 scfm. This allows two blowers to function with one as a backup.

The digester system has a blower capable of 1,700 scfm to meet an air demand of 1,676 scfm at 7 psi. If that blower were to fail, the interconnection between the two air systems can be opened to provide air to the digester system. Because the 2 systems have different air pressures (10 psi versus 7 psi), it is recommended that a pressure sustaining valve be installed. This will prevent excessive air flow to the digester and assure adequate air flow to the aeration basins..

3.5 Blower Condition

Under normal conditions, a blower and its motor should last an average of 30 years before it needs to be replaced. Site conditions may vary and that could cause this equipment to last a longer or shorter period of time.

The installation date information for each of the four blowers is shown below in Table 8.

Table 8 Blower Installation Dates

Blower	Location	Blower Install Date	Motor Install Date
No. 2 – Atlas Copco ZM082-09	Blower Building	2007	2019
No. 3 – Atlas Copco ZM082-09	Blower Building	2016	2020
No. 4 – Lone Star MC-9	Blower Building	2020	2020
Digester – Continental	Digester	2002	2002?

Mechanical observations on the blowers were as follows:

- Blowers 2, 3 and 4 appear to be in working condition and were in service at the time of the site visits.
- The blower piping and valves show signs of corrosion; however overall, the piping appears to be in acceptable condition.
- There is a sizeable leak on the air header piping just outside the blower building.
- There is no flow measurement device for any of the blowers, which does not allow the operators to know the amount of air delivered to the aeration basins.
- The blower room HVAC needs to be replaced. Currently, there are portable fans to circulate the air in the blower building.
- Digester blower and motor is in average condition. Per the plant's major maintenance log sheet, there has been no major maintenance required.

These blowers and motors are in relatively good condition and there is no obvious need to vary significantly from the assumed 30-year original useful life. This would result in an estimated remaining useful life as shown in Table 9.

Table 9 Estimated Remaining Useful Life of Blowers and Motors

Blower	Location	Blower Estimated Remaining Life	Motor Estimated Remaining Life
No. 2 – Atlas Copco ZM082-09	Blower Building	11 years	23 years
No. 3 – Atlas Copco ZM082-09	Blower Building	20 years	24 years
No. 4 – Lone Star MC-9	Blower Building	24 years	24 years
Digester – Continental	Digester	6 years	6 years

3.6 Recommendations

The blowers and motors in the blower building have sufficient capacity and redundancy for the estimated air demands of the facility. They should be relocated one at a time to the recommended new blower building.

Several flow meters should be placed at strategic locations on the air header system to allow operators to perform better adjustments on the aeration system. This would also minimize the chance of operators accidentally blowing out the membranes on the diffusers.

A pressure sustaining valve should be installed between the two sections of the air header system. This will minimize air balancing issues when the blower building system needs to provide air to the entire plant.

4 Diffusers and Air Header Piping

As described in section 4 of this report, attention was paid to the number and types of diffusers to be used for this plant.

The plant currently uses fine bubble tube diffusers. These consist of a membrane sleeve around a diffuser pipe. The diffusers spread outward from a series of drop pipes, and sit above the basin floor. They also extend outwards towards the walls of the basin, but a significant gap exists between the diffusers and the sidewalls. The diffusers were recently replaced and some of the membranes have already blown out.

HDR investigated several different types of membranes to potentially use in an upgrade to the aeration system. The characteristics that were included are:

- High oxygen transfer efficiency – A higher transfer efficiency means that less blower capacity is needed to perform the same level of treatment.
- Ability to receive high volumes of air. The square footage of the aeration basin is quite small, so the need to fit all diffusers in the basins is crucial.
- Proven experience – The City should use a manufacture that has many installations of the chosen diffuser.
- Ease of installation – The diffuser grid system needs to be easy to install, since one aeration basin at a time needs to be emptied for installation.

HDR recommends the use of 9-inch diameter Silver Series II or Silver Series II LP fine bubble disc diffusers by Sanitaire. The primary reasons for this selection are:

- Disc diffusers create a more evenly spaced, radial bubble plume than fine bubble tube diffusers.
- There is a lower likelihood of bubble coalescence.
- The oxygen transfer efficiency of these membranes can be up to 3.2 scfm per membrane per foot of submergence. This can be 10% or more efficient than other types of fine bubble membranes.
- Disc diffusers cover the entire floor of the basin, resulting in better aeration and elimination of dead spots.
- Sanitaire is the industry leader in fine bubble diffusers.
- The Silver Series II LP allows air flows up to 12 scfm, which is two to three times more than other fine tube and disc bubble diffusers. This will minimize the chance for membrane blowouts.

These Sanitaire disc membranes are anchored to the floor, which results in even better oxygen transfer to the wastewater, since there is more contact time.

HDR consulted with Sanitaire to get a preliminary price quote, and to get their initial advice on the number of diffusers needed, including potential layouts in the basins.

Sanitaire calculated that an air flow of 3,300 scfm would be needed to treat the wastewater. This took into account many site-specific characteristics such as basin dimensions, diffuser submergence, wastewater strength, and temperature.

The Sanitaire computer model calculated that 1,298 membranes would be needed to effectively treat the plant's wastewater. This would be spread evenly between the two aeration basins.

The grid layout is shown below. Eleven headers would connect to a main 8" header at the bottom of the basin. A single vertical air pipe would connect the bottom 8" header at the bottom to the existing air header system above water level. Each of the eleven headers at the bottom would have approximately 59 diffusers. The headers would be bolted to the basin floor, and is detailed in Appendix A.

Preliminary quotes from Sanitaire are shown in Chapter 7 of this document.

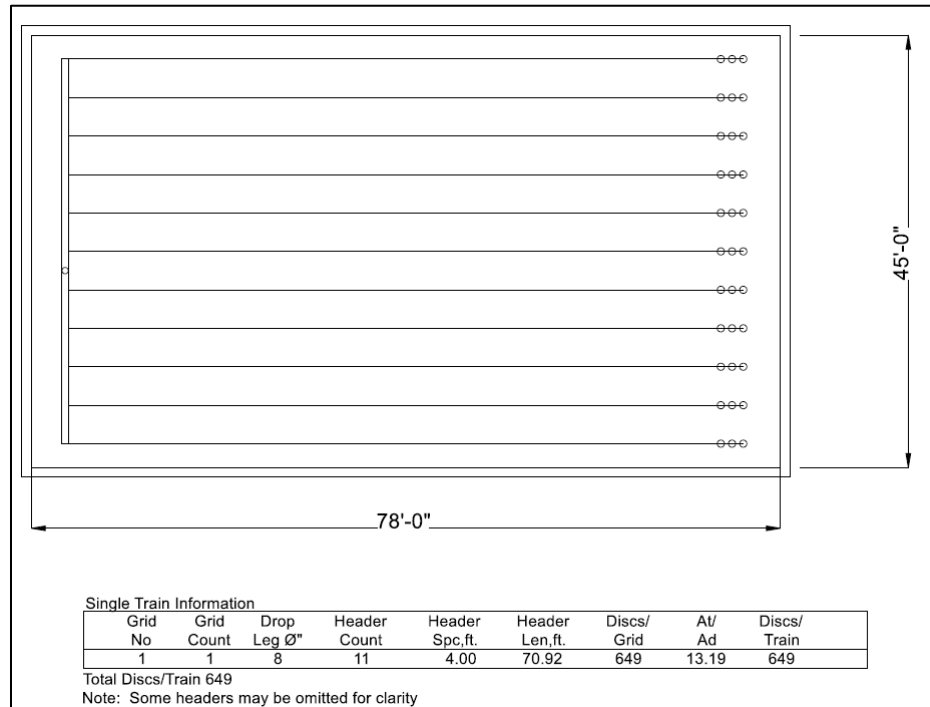


Figure 1 Grid Layout of Recommended Diffusers

Details of the Sanitaire Silver Series II LP system are included in Appendix A, but a few details are shown below.

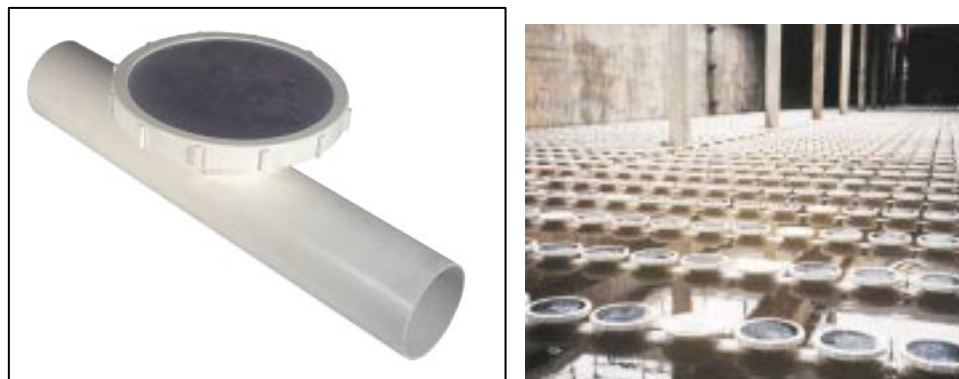


Figure 2 Sanitaire Diffuser and Grid Layout

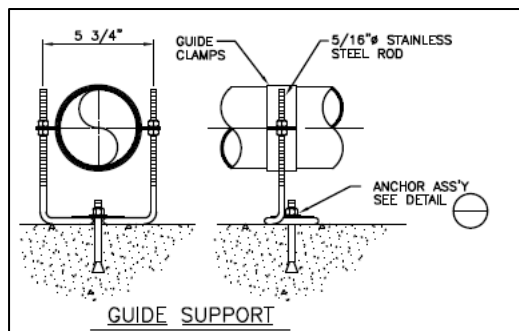


Figure 3 Connection Detail of Diffuser Grid Pipe

5 Blower Building Assessment

5.1 Existing Building

The existing blower building is located to the north of the existing aeration basins. It is a one-story building, approximately 25 feet by 45 feet in size. The exact year of construction is unknown, but it was already in place when the plant was expanded in 1980. It is likely that the building was in service around 1972. This is when many cities across the country installed wastewater treatment plants after enactment of the Clean Water Act in 1972. Using this assumption, the building is approximately 54 years old.

The buildings walls are concrete block. The roof is flat and was constructed with reinforced concrete beams. Roofing material is applied on the concrete roof in order to make it waterproof.

The existing blower building serves two purposes. The eastern 25% of the building is the influent pump station. Below ground level is the dry well portion of the lift station. It contains the influent lift station pumps and associated piping and valves. Adjacent to the building, and sharing a common wall with the dry well, is the wet well for the lift station. Findings from the condition assessment project done approximately 3 years ago found that the concrete inside of this wet well was in extremely poor condition.

The western 75% of the blower building is used for blowers. There are currently 3 blowers in this room. There is space where three additional blowers were located in the past.

The original lift station is wet pit / dry pit style. The wet well is a reinforced concrete rectangular structure, approximately 20 FT deep and approximately 23.5 ft long and only 4.5 wide. In the dry well, there are 4 “dry pit submersible” pumps.

The floor elevation of the blower building is subject to occasional flooding. Although the treatment plant site is surrounded by a levee, the City has stated their desire to move all equipment and electrical systems above flood plain elevation. Although there are no major electrical cabinets in the blower building, the three blowers and associated motors and control panels could be affected by flooding.



Figure 4 View of the Blower Building from the Southeast



Figure 5 View of Blower Building ceiling and walls

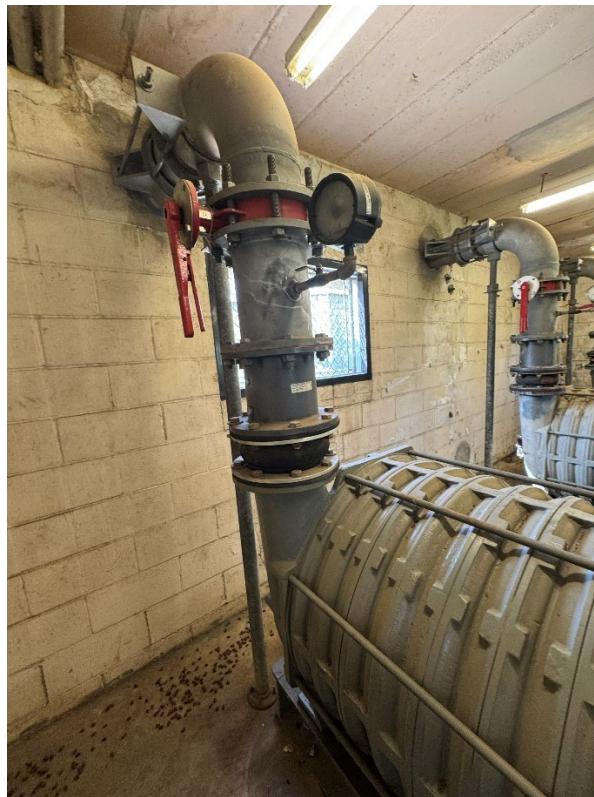


Figure 6 View of Blower and south wall of Blower Building

5.2 Assessment and Recommendation

Although the building is over 50 years old, the walls and roof are in reasonably good condition. The walls do have occasional cracking in the mortar between the concrete blocks. There are also a fair number of sealed penetrations from the modifications over the decades. The concrete roof beams are in fair condition, and there are no obvious signs of water leaks.

The big concern is the dry well and wet well under the building. The extremely poor condition of the concrete is likely to be impacted by construction around the existing building. This could cause a complete collapse of the influent pump station.

We evaluated three potential scenarios that would move the blowers and associated equipment above the floodplain.

1. Reset the existing blowers on the existing concrete roof and construct a concrete block second story.
2. Build an independent concrete block building above the existing blower building. This would be supported on pillars and would not touch the existing blower building.
3. Build a new blower building adjacent to the existing aeration basin. This would be on concrete pillars and approximately the same elevation as the walkways around the basins.

Option 1 has several disadvantages. It is unknown if the existing blower building was designed to support a second story. In addition, there are concerns about the concrete roof beams. It is not known if they were designed to support the weight of 3 blowers. In addition, there might be some slight movement of the beams due to the vibration of the blowers. Lastly, the construction and additional weight of a second story could impact the severely degraded wall of the influent lift station, causing it to collapse.

Option 2 has one major disadvantage. The construction could cause the influent lift station wet well to collapse, similar to Option 1.

Option 3 has several advantages. It can be constructed with much less impact on the existing blower operations. It also will not impact the influent lift station. Its location adjacent to the aeration basin will also result in lower cost of stainless-steel pipe for the air header.

We recommend Option 3 – Construction of a new raised blower building adjacent to the aeration tanks.

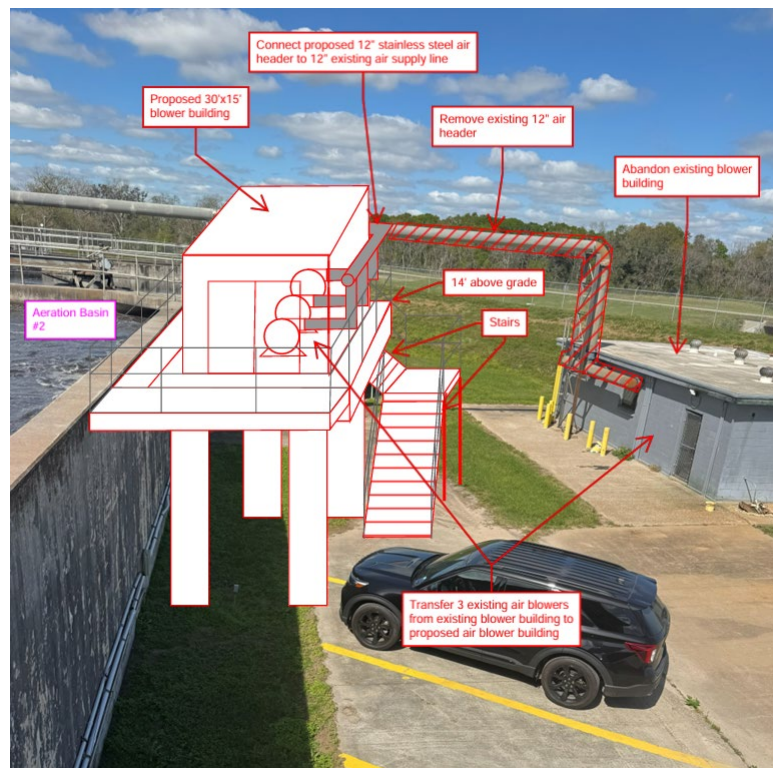


Figure 7 Potential layout of new Blower Building

6 Reuse System Expansion

6.1 Existing

The existing reuse system uses water from the chlorine contact chamber to provide water to the chlorination and dechlorination system. There is a small pump located on the walkway of the chlorine contact chamber. The piping leads to the chlorination /dechlorination area. In this area, vacuum ejectors are placed on different branches of the reuse pipe to form chemical solutions. These solutions are piped back to the chlorine contact chamber, where they discharge to different locations.

6.2 Recommended Improvements

The recommendations for expanding the reuse system are as follows:

- Install a second reuse pump at the chlorine contact chamber.
- Cut and cap the potable water system at a location to limit the potable water to the administration building and the eye washes.
- Install new piping from the new pump to the portion of the potable water system that has been isolated from the remaining potable water system.

This effort will provide water to all points around the aeration basin and the clarifiers. A large amount of water is currently used at these locations for continual spray down and for hosing down areas. A proposed layout for the reuse system improvements is shown in Figure 8 below.

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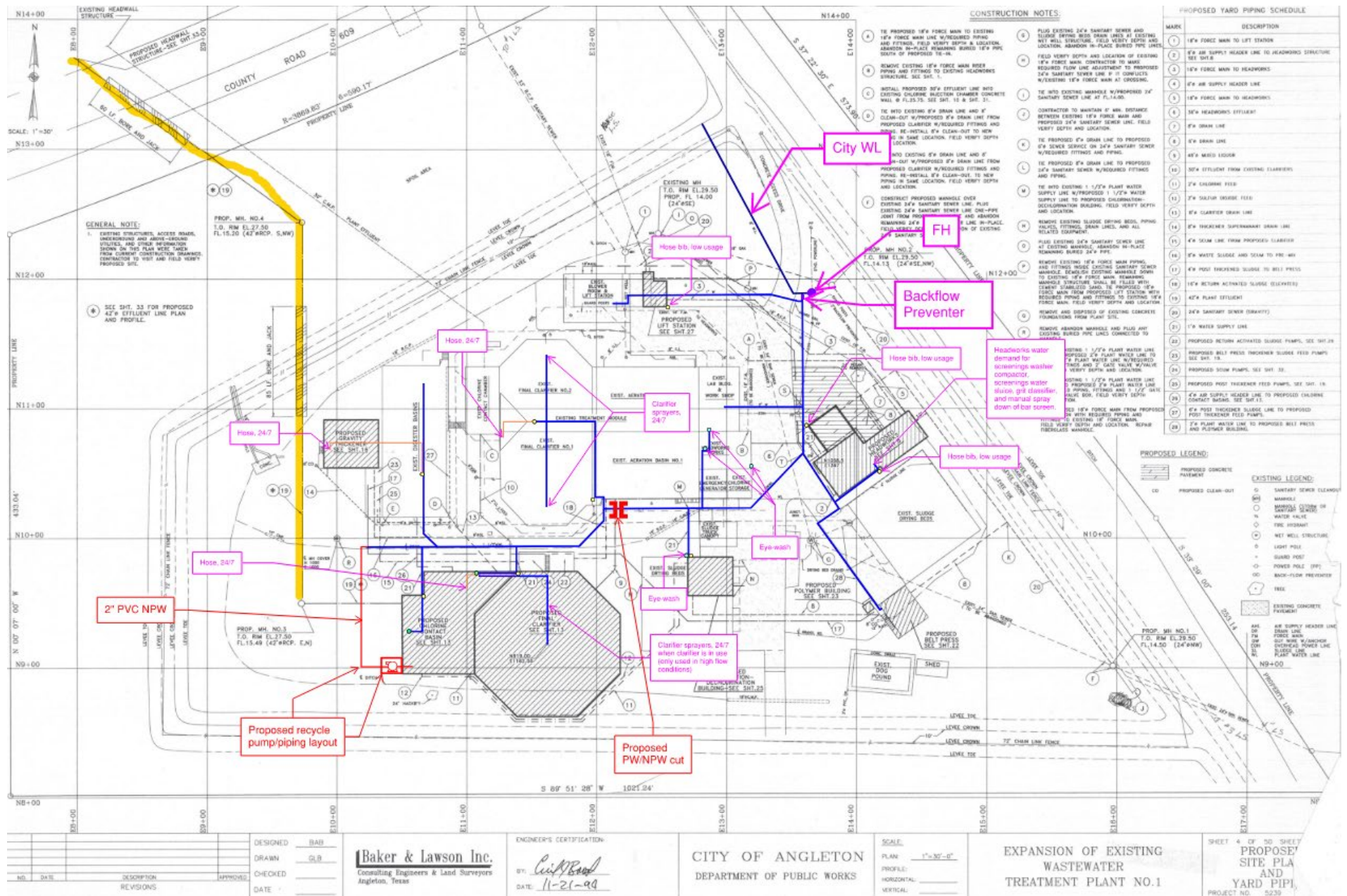


Figure 8 Proposed Reuse System Improvements Layout

7 Opinion of Probable Cost

7.1 Diffusers and Air Headers

The recommended construction components for the diffusers and air headers include:

- Purchase and installation of 1,298 Sanitaire diffusers and associated header piping in the two aeration basins.
- Modifications to the existing air header piping to connect to the new diffuser systems.
- Purchase and installation of four air header flow meters.
- Purchase and installation of an 8-inch pressure sustaining valve on the air header.
- Updates to the SCADA control system to automatically adjust the air flow to achieve a target dissolved oxygen level.

Table 10 OPCC for Diffusers and Headers

Item	OPCC
Installation of Sanitaire diffusers • Preliminary estimate of Sanitaire equipment \$200,000. • Draining one tank and cleaning two tanks \$50,000 • Labor to install Sanitaire equipment \$110,000 (\$15 per square foot) • Header tie- ins (2) \$10,000 • 120 feet of 8" stainless pipe and connections \$50,000 • Other miscellaneous works \$50,000	\$470,000
Modifications to Existing Air Header	\$50,000
Air Header Flow Meters	\$40,000
Pressure Sustaining Valve	\$20,000
SCADA Updates \$50,000	\$50,000
Total Construction Estimate	\$630,000
Contingency (20%)	\$126,000
Engineering and Construction Management (15%)	\$113,000
OPCC	\$869,000

7.2 Reuse System

This work includes the items in Table 11 below.

Table 11 OPC for Reuse System

Item	OPCC
Purchase and installation of reuse pump, installed on platform, including electrical and bladder tank.	\$30,000
Installation of new reuse piping	\$10,000
Total Construction Estimate	\$40,000
Contingency (20%)	\$8,000
Engineering and Construction Management (15%)	\$7,000
OPCC	\$55,000

7.3 New Blower Building

Since this construction is much more complex than the other two OPCCs, HDR used a two-step process to develop the OPCC. The first step involved the use of experienced cost estimating professionals within HDR to develop a Class 4 cost estimate for the new blower building. The expected accuracy ranges for this class estimate are –15 to –30 percent on the low side and +20 to +50 percent on the high side. This also included estimated quantities, broken down by cost categories that are commonly utilized by construction contractors.

In our second step, we sent the detailed cost categories and quantities (without cost estimates) to a local contractor that has recently built similar type facilities. This contractor provided an initial cost estimate for the new blower building and relocation of the existing blowers. It is important to remember that this cost estimate was based solely on preliminary quantities and explanations from HDR on the high-level approach to the project.

The primary advantages of this two-step approach are that we were able to 1) establish a baseline set of cost estimates and quantities, and 2) refine the baseline with local experienced construction contractors.

7.3.1 Step 1 – Baseline OPCC

The details of this cost estimate are included in Appendix A. The estimate methodology includes the following:

Direct Costs

We used a combination of HDR database pricing, similar project costs, and historical data were used to establish direct costs. Direct cost categories include Labor (including

burdens and fringes), Materials, Equipment, and Subcontractors.

Indirect Costs

Once the Direct Costs are calculated, Indirect Costs are calculated using a percentage applied to the Direct Cost total. For this project, the following indirect Costs were used:

- General Contractor Mobilization & Demobilization – (6%)
- General Contractor Home Office Overhead – (6%)
- General Contractor Field General Conditions – (20%)
- Sales Tax – (8.25%)
- General Contractor Fee/Profit – (15%)
- Design contingency – (30%)
- General Contractor Bonds & Insurance – (2.5%)
- Escalation Factor (6.73%) – Calculated with a 10-Month Construction Duration: Material, Labor, Construction Equipment, and Fuel
- Market Volatility Adjustment Factor (15%) – Supply-chain issues, Price Volatility, Transportation Issues, Labor Shortages, Premiums on Labor to Keep and Retain Craft Labor, Russian Invasion of Ukraine, Longer Lead Times Than Normal, and Covid Mandates.

The baseline OPCC shown in Appendix A, as well as Table 12 below, includes two items that will be removed from the analysis.

- Sales tax on materials and equipment – This 8.25% sales tax is not required for this project. This will remove the line item for \$58,640.
- Market Volatility Adjustment Factor – This 15% factor was deemed unnecessary for this project. The cost variability that this factor anticipates is heavily weighted on mechanical and electrical equipment and is normally included in planning level Class 4 estimates like this. This project includes very little mechanical and electrical equipment, so it will not be included in our Step 1 OPCC

Factored Costs

The following Factored Costs were used on this project:

- Electrical 12%
- Instrumentation and Controls 6%

Table 12 Breakdown of Blower Building OPCC

Description	Amount	Totals	Rate
Labor	237,996	3,280,023	1
Material	313,397		
Equipment	397,387	1,499,504	1
Subcontract	228,000		
Other			
Subtotal Direct Cost	1,176,780	1,176,780	
DIVISION 02	131,638		25.000 %
DIVISION 04	10,498		25.000 %
DIVISION 05	31,489		25.000 %
DIVISION 07	3,756		25.000 %
DIVISION 08	2,657		25.000 %
DIVISION 23	4,500		25.000 %
DIVISION 31	118		10.000 %
DIVISION 32	2,917		10.000 %
DIVISION 41	19,695		25.000 %
Subtotal W/Subcontractor Costs	207,268	1,384,048	
Contractor's Mob	83,043		6.000 %
Contractor's Home Office Overhead	83,043		6.000 %
Contractor's General Conditions	276,810		20.000 %
Subtotal Costs	442,896	1,826,944	
Sales Tax Estimate (Mat & Eq)	58,640		8.250 %
Subtotal Costs W/Tax	58,640	1,885,584	
Contractor's Fee	282,838		15.000 %
Subtotal Costs	282,838	2,168,422	
Design Development Contingency	650,527		30.000 %
Subtotal Costs	650,527	2,818,949	
Escalation Project (Year)	189,715		6.730 %
Subtotal Costs	189,715	3,008,664	
Market Volatility Adjustment Factor	451,300		15.000 %
Subtotal Costs	451,300	3,459,964	
Electrical	415,196		12.000 %
Instrumentation and Controls	207,598		6.000 %
Subtotal Factored Costs	622,794	4,082,758	
Contractor's Bonds & Insurance	102,069		2.500 %
Construction Total	102,069	4,184,827	

As stated above, the \$4,184,827 shown in Table 12 above can be reduced by removing the sales tax line and the Market Volatility Adjustment Factor. By doing this, the Step 1 OPCC is now \$3,547,323.

For Class 4 estimates at this early stage of development, the expected accuracy ranges for this class estimate are –15 to –30 percent on the low side and +20 to +50 percent on the high side.

7.3.2 Step 2 – Cost Estimate by Local Contractor

The cost estimate breakdown from Step 1 was given to a local contractor, without any cost estimates. This contractor is based in the south of Houston and has extensive experience in building projects at municipal wastewater treatment plants. In addition, this contractor recently constructed an elevated blower building similar to the one being considered for this site.

After reviewing the information and discussing the project with HDR, the contractor provided a cost estimate. This estimate is shown below in Table 13. There was only one

value that was modified, which was the line for electrical. The contractor included a value of \$1,000,000 since they were unclear of what is required and they stated that the value was likely very high. Based on the likely electrical scope for the project, this value was lowered to \$600,000.

Table 13 Local Contractor Cost Estimate

		Costs
001.10	GENERAL REQUIREMENTS	
DIVISION 01	GENERAL REQUIREMENTS	
01 55 00.000.100	Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.	\$ 20,000
TOTAL		\$ 20,000
005.15	SITE / CIVIL / STORMWATER	
DIVISION 02	EXISTING CONDITIONS	
02 41 00.020.110	General Site Demolition, Asphalt Pavement - 1,500 Sq. Ft.	\$ 20,000
02 41 06.000.105	Utility and Yard Pipe Demolition (See Exhibit for air header, approximately 150 lf)	\$ 30,000
DIVISION 32	EXTERIOR IMPROVEMENTS	
32 12 16.130.110	Concrete Pavement Replacement Allowance, approximately 2,500 Sq. Ft.	\$ 150,000
32 92 00.020.100	Sodding Allowance	\$ 10,000
TOTAL		\$ 210,000
160.18	BLOWER BUILDING	
DIVISION 02	EXISTING CONDITIONS	
02 41 01.001.100	Crane Rental for Entire Project plus Relocate 3 Blowers - Flat bed trailer, 1 Truck Driver + 5	\$ 170,000
TOTAL		\$ 170,000
DIVISION 03	CONCRETE	
03 12 00.000.100	Footings for Silts, 4' x 4' x 18" Thick	\$ 40,000
03 23 24.030.110	Stilts, CIP Square Column 30" x 24' Ht. x 4 Total	\$ 60,000
03 24 00.024.000	24" Elevated Slab x 450 Sq. Ft.	\$ 220,000
03 41 00.001.120	Precast double tee roof x 450 Sq. Ft.	\$ 40,000
TOTAL		\$ 360,000
DIVISION 04 MASONRY		
04 22 01.012.105	CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet	\$ 120,000
TOTAL		\$ 120,000
DIVISION 05	METALS	
05 51 00.020.100	Aluminum Stairs, 4' Wide + Aluminum Landings	\$ 50,000
05 51 36.005.100	Metal Walkways, 400 Sq. Ft	\$ 30,000
05 52 13.103.100	Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.	\$ 50,000
TOTAL		\$ 130,000
DIVISION 07	THERMAL, MOISTURE PROTECTION	
07 54 19.010.110	PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.	\$ 50,000
TOTAL		\$ 50,000
DIVISION 08	OPENINGS	
08 11 16.030.110	Aluminum Doors & Frames - 3' x 7' x 1 Total	\$ 10,000
08 33 23.005.110	Aluminum Rolling Overhead Doors - 14' x 14' x 1 Total	\$ 50,000
TOTAL		\$ 60,000
DIVISION 23	HEATING, VENTILATING & AIR-CONDITIONING	
23 00 00.000	HVAC Allowance for 450 SF (Louvers only - with Temp sensors)	\$ 60,000
TOTAL		\$ 60,000
DIVISION 40	PROCESS INTEGRATION (EXPOSED PIPE, VALVES AND	
40 05 23.112.100	Stainless Steel, Welded 316, 12" Dia Connection to existing Air Header (3 Blowers)	\$ 300,000
40 05 23.112.110	Connect 12" Header to Existing	\$ 40,000
40 05 23.212.100	Fittings - Stainless Steel, 12" Dia	\$ 150,000
TOTAL		\$ 490,000
DIVISION 41	MATERIAL PROCESSING & HANDLING	
41 22 13.130.100	Bridge Crane	\$ 80,000
TOTAL		\$ 80,000
OTHER ITEMS ESTIMATOR INCLUDED BASED ON PERCENTAGE OF PROJECT COST		
	Electrical	\$ 600,000
	Instrumentation and Controls	\$ 50,000
TOTAL		\$ 650,000
TOTAL DIRECT COSTS		\$ 2,400,000

This value of \$2,400,000 does not include design or construction phase services by the engineer. For this reason, an additional 15% was added to amount. This results in an OPCC of \$2,760,000.

7.4 Total OPCC

The following is the estimated OPCC for the three main components of this scope of work. It includes all contractor costs, engineering, and construction management.

Table 14 Estimated OPCC for Angleton WWTP Projects

Component	OPCC
Air Diffusers and Air Header	\$869,000
Reuse System	\$55,000
Blower Building and Relocation	\$2,760,000
TOTAL	\$3,684,000

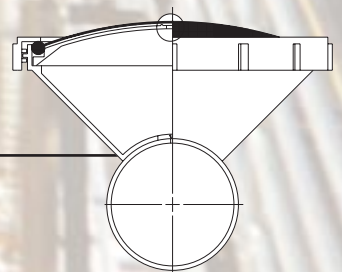
Appendix A

Information on Sanitaire Air Diffusers



Membrane Disc

Fine Bubble Aeration Systems



Sanitaire



ITT Industries
Engineered for life



Technology You Can Count On

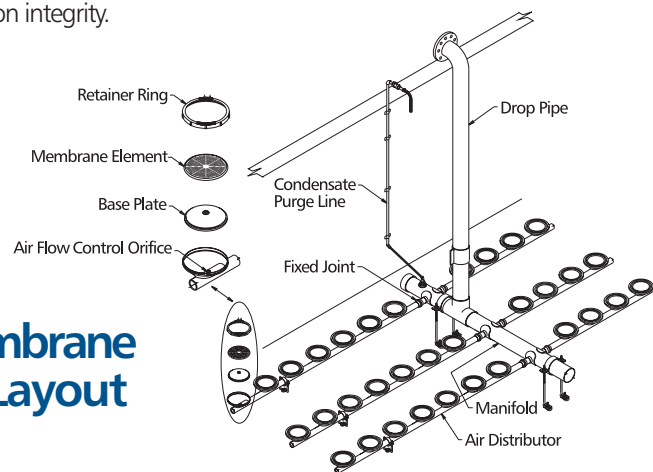
SANITAIRE® is the trade name recognized throughout the wastewater treatment industry for quality products and advanced technology. SANITAIRE membrane fine bubble disc diffusers are recognized worldwide for their high oxygen transfer efficiency and durability in wastewater treatment plant aeration processes.

Owners and engineers prefer these technologically advanced fine bubble diffusers because:

- Power costs can be reduced by 50% or more
- High oxygen transfer efficiency and relatively low system headloss lead to low energy costs
- Minimal maintenance is required
- Gentle positive mixing action using full floor coverage aeration grids promotes excellent floc formation

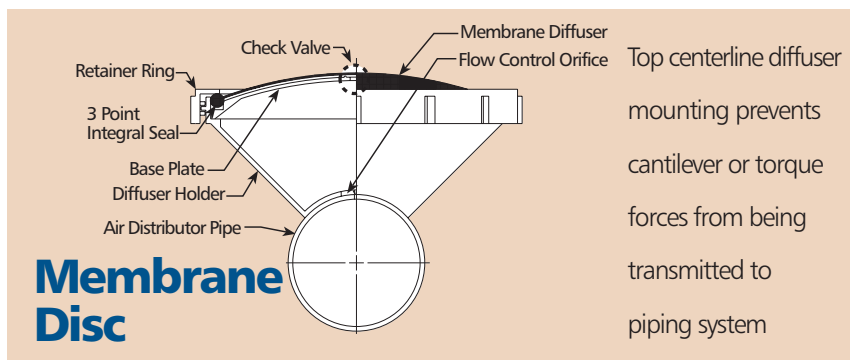
Sanitaire's leadership and experience in aeration technology has resulted in high quality SANITAIRE fine bubble disc aeration systems being specified more than any other aeration system. The membrane disc fine bubble diffusion system offers advantages in performance, engineering, quality and construction integrity.

Typical Membrane Disc Grid Layout



Membrane Disc

Fine Bubble Aeration Systems



Top centerline diffuser mounting prevents cantilever or torque forces from being transmitted to piping system

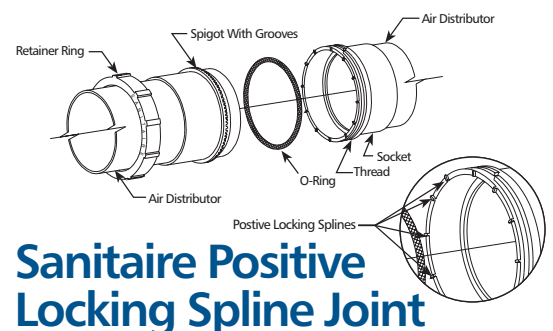
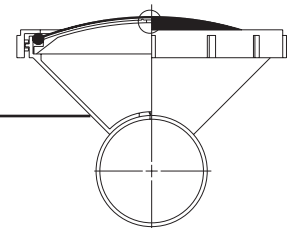


Diffuser and Holder Features

- Diffuser holders are factory bonded to the air distribution piping eliminating the necessity for field installation and leveling of individual assemblies
- An integral check valve is designed into the unit - the center of the membrane collapses onto the air release port of the base plate when the air is turned off. The diffuser slits also act as check valves and close onto the base plate when air pressure is turned off.
- Integral seal and threaded retainer ring design prevents air leakage and resulting contamination from leakage of mixed liquor solids into the aeration system
- Diffuser and holder are designed to provide full surface uniform air distribution and bubble release
- The membrane is completely supported by the base plate, preventing reverse flexing
- Available in 9-inch (229-mm) and 7-inch (178-mm) diameters

Proven System Components

- The SANITAIRE air distributor system incorporates a patented locking pipe joint that combines sliding and fixed type guide supports to accommodate thermal expansion and contraction. The unique system design allows the individual distributors to move freely through the pipe supports
- The patented SANITAIRE fixed joint features an airtight O-ring seal, anti-rotational splines and a positive threaded locking retainer ring to prevent air leakage, pipe blow apart and distributor rollover
- PVC air distribution piping system - mechanical integrity proven over two decades
- Submerged components of corrosion resistant materials
- Unique all stainless steel anchorage system with threaded supports for infinite adjustments on sloped or irregular floors
- Joint components are factory solvent welded to the pipe ends, allowing for quick and easy field assembly of air distributor sections
- Positive air header drainage with sumps and purge system
- Systems with over 8 million identical diffuser holders installed





Membrane Disc Diffuser Advantages

- Precision die-formed slits are punched perpendicular to membrane grain direction for greater resistance to elongation and tearing
- Proprietary technologically advanced membrane material blended from special synthetic rubber compound has been specifically engineered for domestic and industrial waste applications providing:
 - Resistance to material property changes including permanent set and durometer
 - High modules of elasticity
 - Proper material thickness - lower unit stress
 - Resistance to oils and ultra-violet light
- SANITAIRE advanced *Silver Series* membrane disc diffuser offers extended operational life while maintaining all positive characteristics of previous SANITAIRE membranes such as resistance to physical deformation and the ability to maintain high oxygen transfer efficiency. Alternative materials are available for specific applications
- The unique design eliminates the use of hold-down bolts, lift limiters and metallic mechanical fasteners
- Existing aeration tanks can be easily retrofitted with membrane grid aeration, upgrading existing plant's organic treatment capacity without adding tankage
- Convenient shipping - diffusers and piping are delivered in a compact pallet arrangement
- Ease of installation - in some cases, up to 12 units installed per man-hour. Step-by-step O&M manuals, educational videos and field service representatives also provided
- Factory installed diffuser holders and pipe end fittings

US Patent # 5,714,062

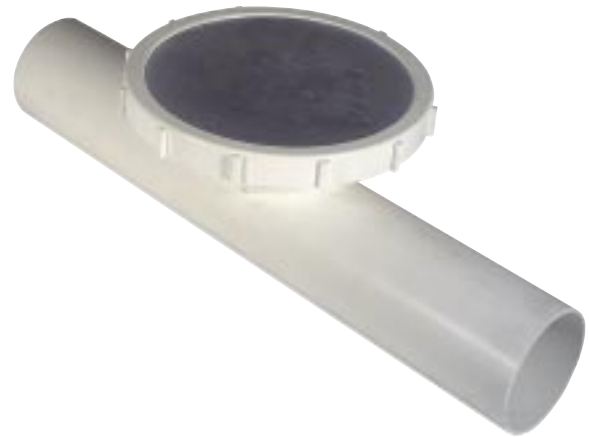
Applications

- Aeration Tanks
- Sludge Holding Tanks
- Aerobic Digesters
- Sequencing Batch Reactors
- Channel Aeration
- Air On/Air Off Processes

Those Who Choose Membrane Disc Aeration Systems...

Get the best of all worlds when they choose proven SANITAIRE components to complete their wastewater treatment system.

Sanitaire provides time tested aeration technology and products for municipal and industrial markets worldwide.



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Sanitaire



ITT Industries
Engineered for life



SANITAIRE

a xylem brand

Diffused Aeration Equipment

for

Oyster Creek WWTP
Aeration Tanks

Sanitaire #s33406-26

May 7, 2026

cs

Sanitaire Aeration Design Inputs for: Oyster Creek WWTP, Sanitaire #s33406-26

Tank Geometry

2 Trains each Consisting of: 1

Parameter	Units	Pass 1
Parallel Reactors		1
Pass Process		Aerobic
SWD	ft	23.0
Submergence	ft	21.9
Volume	ft³	80,730.0
Reactor Geometry:		Rect
Length	ft	78.0
Width	ft	45.0

Oxygen/Air Distribution

	Zone	1
	Pass	1
Default		100.0%

Oxygenation

Parameter	Units	D1	D2	D3
No. Trains Operating		2	2	2
Air Rate	scfm	3,300.0		
Oxygen Requirement	lb/day		9,321.6-A	15,036.0-A
BOD	lb/day		4,203.0	6,780.0
NH3	lb/day		930.0	1,500.0
O2/BOD			1.2	1.2
O2/NH3			4.6	4.6

Standard Oxygen Correction Factor Parameters

Parameter	Units	D1	D2	D3
Alpha			0.6	0.6
Beta			0.98	0.98
Theta			1.024	1.024
Dissolved Oxygen	mg/l		2	2
Site Elevation	FASL	35	35	35
Ambient Pressure	PSIA	14.68	14.68	14.68
Water Temperature	°C	20	20	20

Notes:

Bold, Italicized text indicate assumptions made by Sanitaire

A - Indicates Actual (AOR) Requirement.

S - Indicates Standard Condition (SOR) Oxygen requirement.

If the AOR/SOR parameter is not given, then its value will be evaluated later if suitable alpha, beta, D.O., theta, pressure, and temperature data is supplied.

Round tanks are evaluated as rectangular tanks diameter equal to length and equal surface area.

Annular tanks are evaluated as rectangular tanks of width equal to the annular width and equal surface area.

Sanitaire Project Name: Oyster Creek WWTP
Sanitaire Project #s33406-26
Design Summary

		Operating Point & O2 Distribution		
	Units	D1 Default	D2 Default	D3 Default
No. Trains in Operation		2	2	2
No. Grids in Operation		2	2	2
No. Operating Diffusers		1,298	1,298	1,298
SOR	lb/day	32,400	19,317	31,159
SOTE	%	39.2	41.5	39.4
Total Air Rate	scfm	3,300	1,859	3,159
Min. Diffuser Air Rate	scfm/diff.	2.54	1.43	2.43
Max. Diffuser Air Rate	scfm/diff.	2.54	1.43	2.43
Static Pressure	psig	9.5	9.5	9.5
Diffuser DWP @ Min Air	psig	0.28	0.26	0.28
Diffuser DWP @ Max Air	psig	0.28	0.26	0.28
Pressure @ Top of Dropleg	psig	10.1	9.86	10.07
Est. Blower Efficiency		70%	70%	70%
Est. Motor Efficiency		90%	90%	90%
Shaft Power	Bhp	174.3	96.31	166.4
Est. Motor Electrical Load	kW	144.5	79.83	138.0
Est. Standard Aeration Efficiency	#SOR/BHP-hr	7.75	8.36	7.80

Notes:

- (1) Design air is the maximum of process air or mixing air
- (2) Delivered oxygen based on design air
- (3) Brake Horsepower based on adiabatic compression, 70% mechanical efficiency and 0.30 psi line loss
- (4) Performance based on diffuser density (At/Ad), submergence, and diffuser unit air flow.
- (5) Diffuser Air Flow based on Active Valve Modulation
- (6) Blower Pressure Capability also requires consideration of:
blower and the aeration assembly dropleg connections.
Design Manual (EPA/625/1-89/023), WEF Manual of Practice FD-13, and other
Fine Pore systems regardless of supplier or type of diffuser element.
C. Increased diffuser submergence during Peak Flow conditions.
- (7) Air Flow defined at 20°C
- (8) Fine Mixing air based on MOP/8 0.12 scfm/ft²

Sanitaire Project Name: Oyster Creek WWTP**Sanitaire Project #s33406-26**

Consulting Engineer:

Operating Condition: D1

Oxygen Distribution: Default

Aeration System Design

Parameter	Units	Zone 1	Totals/Overall
Pass		1	
SWD	ft	23.00	
Subm	ft	21.95	
Volume	ft ³	80,730.0	161,460.0
No. Parallel Tanks		1	
No. Trains in Operation		2	
Grid Count		1	2
Dropleg Diameter	inches	8	
At/Ad		13.19102559	
Diffuser Density	% Floor	7.58%	
Diffusers/Grid		649	1,298

Oxygen Transfer

Diffuser Type		SSLP	
Alpha			
Beta			
Theta			
D.O.	mg/l		
Water Temp	°C	20	
AOR/SOR			
Oxygen Distribution	%/Zone	100.0%	100.0%
AOR	lb/day		
SOR	lb/day		
Air Rate (7)	scfm	3,300.0	3,300.0

Performance

Mixing Criteria	scfm/ft ²	0.12	
Safety Factor	%		
Mixing Air (8)	scfm	842.4	
Process Air (for SOR)	scfm	3,300.0	
Design Air (1,7)	scfm	3,300.0	3,300.0
Diffuser Air Rate	scfm/Diff.	2.54	2.54
Delivered SOR	lb/day	32,399.6	32,399.6
Delivered SOTE	%	39.2%	39.2%
Pressure @ Top of Dropleg	psig	10.10	10.10
Shaft Power	Bhp	174.3	174.3

Notes:

(1) Design air is the maximum of process air or mixing air

(2) Delivered oxygen based on design air

(3) Brake Horsepower based on adiabatic compression, 70% mechanical efficiency and 0.30 psi line loss

(4) Performance based on diffuser density (At/Ad), submergence, and diffuser unit air flow.

(5) Diffuser Air Flow based on Active Valve Modulation

(6) Blower Pressure Capability also requires consideration of:

A. The Air Main headloss (piping, fittings, valves, instrumentation, etc.)

between the blower and the aeration assembly dropleg connections.

B. Potential for increased headloss resulting from diffuser fouling and/or aging.

Please refer to the US EPA Fine Pore Design Manual (EPA/625/1-89/023), WEF Manual of Practice FD-13,

and other technical publications for a detailed discussion on this subject. Note that this headloss

consideration relates to all Fine Pore systems regardless of supplier or type of diffuser element.

C. Increased diffuser submergence during Peak Flow conditions.

(7) Air Flow defined at 20°C

(8) Fine Mixing air based on MOP/8 0.12 scfm/ft²

Sanitaire Project Name: Oyster Creek WWTP**Sanitaire Project #s33406-26**

Consulting Engineer:

Operating Condition: D2

Oxygen Distribution: Default

Aeration System Design

Parameter	Units	Zone 1	Totals/Overall
Pass		1	
SWD	ft	23.00	
Subm	ft	21.95	
Volume	ft ³	80,730.0	161,460.0
No. Parallel Tanks		1	
No. Trains in Operation		2	
Grid Count		1	2
Dropleg Diameter	inches	8	
At/Ad		13.19102559	
Diffuser Density	% Floor	7.58%	
Diffusers/Grid		649	1,298

Oxygen Transfer

Diffuser Type		SSLP	
Alpha		0.6	
Beta		0.98	
Theta		1.024	
D.O.	mg/l	2	
Water Temp	°C	20	
AOR/SOR		0.4826	0.4826
Oxygen Distribution	%/Zone	100.0%	100.0%
AOR	lb/day	9,321.6	9,321.6
SOR	lb/day	19,317.2	19,317.2
Air Rate (7)	scfm		

Performance

Mixing Criteria	scfm/ft ²	0.12	
Safety Factor	%		
Mixing Air (8)	scfm	842.4	
Process Air (for SOR)	scfm	1,859.4	
Design Air (1,7)	scfm	1,859.4	1,859.4
Diffuser Air Rate	scfm/Diff.	1.43	1.43
Delivered SOR	lb/day	19,317.2	19,317.2
Delivered SOTE	%	41.5%	41.5%
Pressure @ Top of Dropleg	psig	9.86	9.86
Shaft Power	Bhp	96.3	96.3

Notes:

(1) Design air is the maximum of process air or mixing air

(2) Delivered oxygen based on design air

(3) Brake Horsepower based on adiabatic compression, 70% mechanical efficiency and 0.30 psi line loss

(4) Performance based on diffuser density (At/Ad), submergence, and diffuser unit air flow.

(5) Diffuser Air Flow based on Active Valve Modulation

(6) Blower Pressure Capability also requires consideration of:

A. The Air Main headloss (piping, fittings, valves, instrumentation, etc.)

between the blower and the aeration assembly dropleg connections.

B. Potential for increased headloss resulting from diffuser fouling and/or aging.

Please refer to the US EPA Fine Pore Design Manual (EPA/625/1-89/023), WEF Manual of Practice FD-13,

and other technical publications for a detailed discussion on this subject. Note that this headloss

consideration relates to all Fine Pore systems regardless of supplier or type of diffuser element.

C. Increased diffuser submergence during Peak Flow conditions.

(7) Air Flow defined at 20°C

(8) Fine Mixing air based on MOP/8 0.12 scfm/ft²

Sanitaire Project Name: Oyster Creek WWTP**Sanitaire Project #s33406-26**

Consulting Engineer:

Operating Condition: D3

Oxygen Distribution: Default

Aeration System Design

Parameter	Units	Zone 1	Totals/Overall
Pass		1	
SWD	ft	23.00	
Subm	ft	21.95	
Volume	ft ³	80,730.0	161,460.0
No. Parallel Tanks		1	
No. Trains in Operation		2	
Grid Count		1	2
Dropleg Diameter	inches	8	
At/Ad		13.19102559	
Diffuser Density	% Floor	7.58%	
Diffusers/Grid		649	1,298

Oxygen Transfer

Diffuser Type		SSLP	
Alpha		0.6	
Beta		0.98	
Theta		1.024	
D.O.	mg/l	2	
Water Temp	°C	20	
AOR/SOR		0.4826	0.4826
Oxygen Distribution	%/Zone	100.0%	100.0%
AOR	lb/day	15,036.0	15,036.0
SOR	lb/day	31,159.2	31,159.2
Air Rate (7)	scfm		

Performance

Mixing Criteria	scfm/ft ²	0.12	
Safety Factor	%		
Mixing Air (8)	scfm	842.4	
Process Air (for SOR)	scfm	3,158.9	
Design Air (1,7)	scfm	3,158.9	3,158.9
Diffuser Air Rate	scfm/Diff.	2.43	2.43
Delivered SOR	lb/day	31,159.2	31,159.2
Delivered SOTE	%	39.4%	39.4%
Pressure @ Top of Dropleg	psig	10.07	10.07
Shaft Power	Bhp	166.4	166.4

Notes:

(1) Design air is the maximum of process air or mixing air

(2) Delivered oxygen based on design air

(3) Brake Horsepower based on adiabatic compression, 70% mechanical efficiency and 0.30 psi line loss

(4) Performance based on diffuser density (At/Ad), submergence, and diffuser unit air flow.

(5) Diffuser Air Flow based on Active Valve Modulation

(6) Blower Pressure Capability also requires consideration of:

A. The Air Main headloss (piping, fittings, valves, instrumentation, etc.)

between the blower and the aeration assembly dropleg connections.

B. Potential for increased headloss resulting from diffuser fouling and/or aging.

Please refer to the US EPA Fine Pore Design Manual (EPA/625/1-89/023), WEF Manual of Practice FD-13,

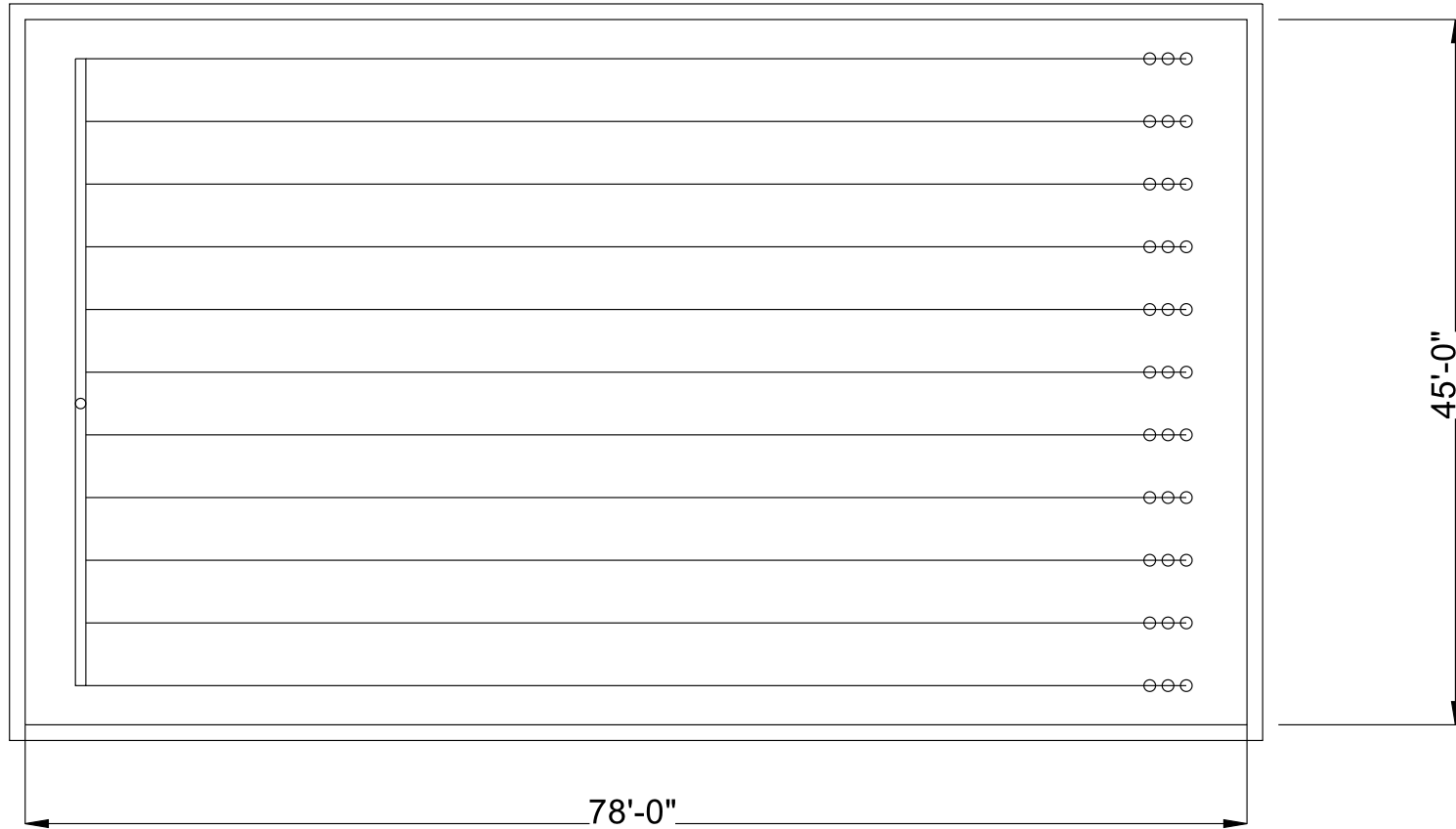
and other technical publications for a detailed discussion on this subject. Note that this headloss

consideration relates to all Fine Pore systems regardless of supplier or type of diffuser element.

C. Increased diffuser submergence during Peak Flow conditions.

(7) Air Flow defined at 20°C

(8) Fine Mixing air based on MOP/8 0.12 scfm/ft²



Single Train Information

Grid No	Grid Count	Drop Leg Ø"	Header Count	Header Spc,ft.	Header Len,ft.	Discs/ Grid	At/ Ad	Discs/ Train
1	1	8	11	4.00	70.92	649	13.19	649

Total Discs/Train 649

Note: Some headers may be omitted for clarity

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Oyster Creek WWTP
9" Disc Aeration System

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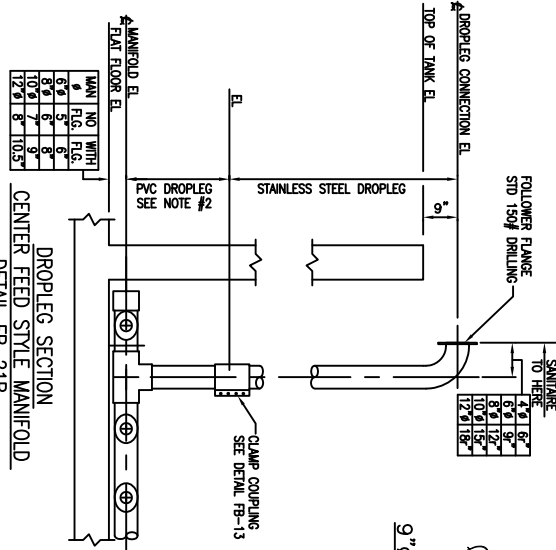
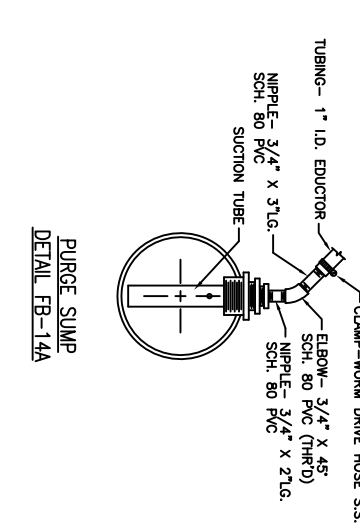
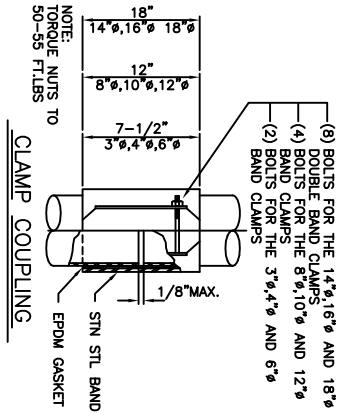
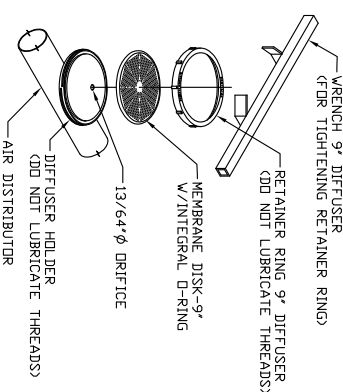
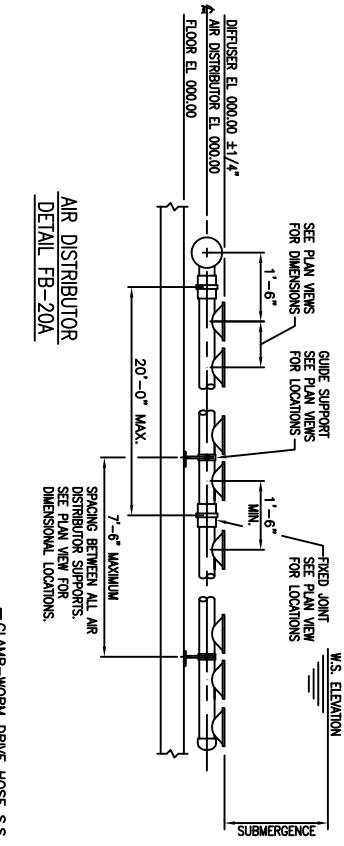
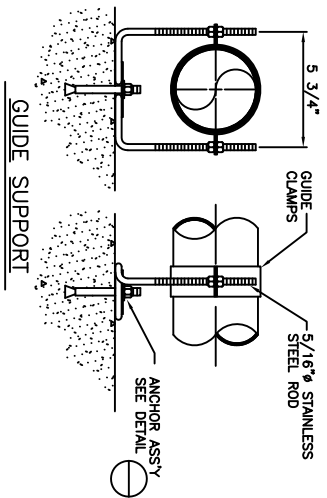
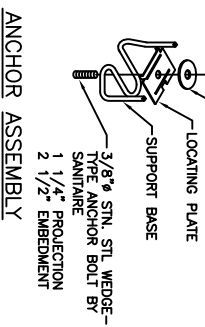
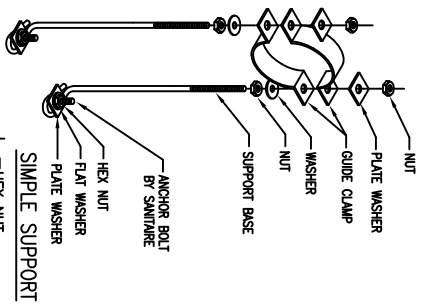
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MODEL

JOB

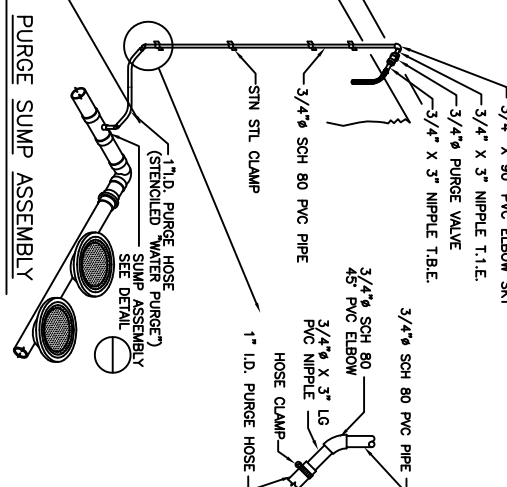
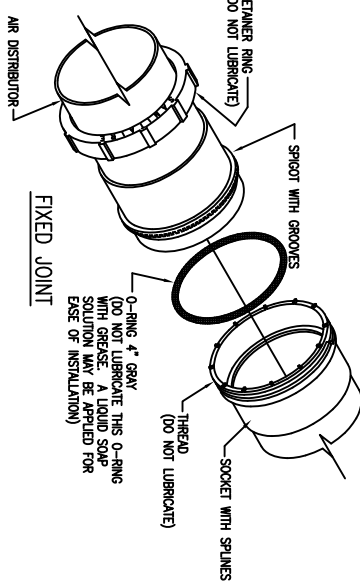
s33406-26

SHEET



DROPLEG SECTION CENTER FEED STYLE MANIFOLD DETAIL FB-21B

MAN. NO. WITH	MAN. NO. WITHOUT
6" F.G. F.G.	6" F.G. F.G.
8" F.G. F.G.	8" F.G. F.G.
10" F.G. F.G.	10" F.G. F.G.
12" F.G. F.G.	12" F.G. F.G.



Appendix B

OPCC Development for New Blower Building

City of Angleton WWTP Blower Expansion, Concept Level of Design

May 13, 2026

Basis of Estimate

This estimate utilizes the following financial data for all pricing included. The direct costs and indirect cost percentages are based on experience, current market conditions, and historical data.

SCOPE OF WORK

The project is in Angleton, TX for Angleton WWTP. The scope of work includes construction of a new CMU Blower building. The (3) existing blowers will be removed from the old blower building into the newly constructed building. The estimate includes some assumed site work, equipment for relocation, construction phasing cost, stainless steel piping, metal walkways, and aluminum stairs. The opinion of probable cost is \$4,185,000.

Project Number: 1045852

COST SUMMARY

Summary of Opinion of Probable Construction Cost		
High Range		Low Range
+50%	Construction Cost	-30%
\$ 6,278,000	\$ 4,185,000	\$ 2,930,000

QUOTES:

- None.

ESTIMATE CLASSIFICATION:

Class 4 This estimate is prepared based on limited information, where the preliminary engineering is from 1 to 15 percent complete. Detailed strategic planning, business development, project screening, alternative scheme analysis, confirmation of economic and or technical feasibility, and preliminary budget approval are needed to proceed. Examples of estimating methods used would be equipment and or system process factors, scale-up factors, and parametric and modeling techniques. Scope allowances are often included. The expected accuracy ranges for this class estimate are -15 to -30 percent on the low side and +20 to +50 percent on the high side.

DIRECT COST METHODOLOGY:

- A combination of HDR database pricing, similar project costs, and historical data were used to establish direct costs.
- Labor rates include all burdens and fringes.

- Labor rates are Open Shop.
- All labor is done on normal 8-hour days, 5 days a week Monday through Friday.
- Fluctuations in labor, material, and equipment rental pricing have yet to be adjusted due to market stability. Single mobilization.

INDIRECT COST METHODOLOGY:

- General Contractor Mobilization & Demobilization – (6%)
- General Contractor Home Office Overhead – (6%)
- General Contractor Field General Conditions – (20%)
- Sales Tax – (8.25%)
- General Contractor Fee/Profit – (15%)
- Design contingency – (30%)
- General Contractor Bonds & Insurance – (2.5%)
- Escalation Factor (6.73%) – **Calculated with a 10-Month Construction Duration:** Material, Labor, Construction Equipment, and Fuel
- Market Volatility Adjustment Factor (15%) – Supply-chain issues, Price Volatility, Transportation Issues, Labor Shortages, Premiums on Labor to Keep and Retain Craft Labor, Russian Invasion of Ukraine, Longer Lead Times Than Normal, and Covid Mandates.

FACTORED COSTS:

- Electrical 12%
- Instrumentation and Controls 6%

ALLOWANCES:

- Construction Equipment - Crane Rental - 5 Month Rental.
- Site Grading - 1,500 Sq. Ft.
- Asphalt Pavement Replacement Allowance, 04" binder x 02" wearing course x 2,500 Sq. Ft.
- Construction Phasing Costs - \$200,000/LS.
- HVAC Allowance - \$40/Sq. Ft.
- Landscaping Allowance - \$5,000.

ASSUMPTIONS:

- This work will be completed uninterrupted, with only one mobilization and demobilization per construction stage for the Prime Contractor and sub-contractor.
- This project will be worked on a standard work week.
- Project to be competitively bid, with a minimum of 3 bidders.
- All regulatory approvals will be obtained by others prior to mobilization.
- Subcontractors and trade labor can be procured locally or within a radius that does not require per-diem upcharges.
- Location provides for sufficient lay-down and staging area.
- All procurement by the general contractor and its subcontractor's
- Any/all environmental impact studies and associated permitting will be completed by others prior to mobilization.
- Water and Power for construction activities are available on site at no cost to the contractor.

- The landfill for disposal of non-contaminated construction debris is within 10-mile round trip of the project site.
- Relocate 3 Blowers - Flatbed trailer, 1 Truck Driver + 5 Man Crew x 3 Days each blower.
- Assumed installation of bridge crane.
- Assumed 12" stainless steel pipe replacement of 85 linear feet.
- Assumed demolition of existing asphalt pavement - 1,500 Sq. Ft. x 6" thick.
- Building construction:
 - Stilts, CIP Square Column 30" x 24' Ht. x 4 Total.
 - Footings for Stilts, 4' x 4' x 18" Thick
 - 24" Elevated Slab x 450 Sq. Ft.
 - Precast double tee roof x 450 Sq. Ft.
 - PVC roofing x 450 Sq. Ft.
 - CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet.
 - Metal Walkways, 400 Sq. Ft.
 - Aluminum Doors & Frames - 3' x 7' x 1 Total.
 - Aluminum Rolling Overhead Doors - 14' x 14' x 1 Total.

EXCLUSIONS:

- All permits, regulatory fees, environmental fees or requirements and acquisition of such.
- Off-site storage facilities.
- Extended warranty cost.
- Extreme weather conditions that would affect working days/lost productivity.
- Cost associated with accelerated schedules.
- Cost increases related to recently imposed tariffs.
- Cost/work associated with hazardous and/or contaminated materials.
- Costs associated with endangered species mitigation.
- Cost associated with change orders during construction.
- Non-Construction Costs.
- Owner Costs.
- 24-hour security.
- Gate access equipment or power and communication to a gate location directed on site.
- Cost associated with temporary construction power for work activities within the building or a construction compound.
- Spare parts.
- High performance epoxy coating.
- Pile foundations under structures.
- Cost considerations for BABA funding.
- Site dewatering.
- Sheet piling or sheeting & shoring.
- Auger cast piles.
- Any cost or labor associated with abandonment of the existing blower building.
- Rock excavation, crushing or removal from the project site.

OPCC CAVEAT

Any opinions of probable construction cost or cost estimates provided by HDR, Inc. are made based on information available to HDR, Inc. and based on the cost estimator's experience and qualifications and represent its judgment as an experienced and qualified professional estimator. However, HDR, Inc. has no control over the cost of labor, materials, equipment, or services furnished by others, over the contractor(s') methods of determining prices, or over competitive bidding or market conditions. HDR, Inc. does not guarantee that proposals, bids, or actual project or construction costs will not vary from opinions of probable cost or cost estimates prepared by HDR, Inc.

A recent AGC report indicated that material commodity prices have increased the highest in the past five years in history. Also, during this period, there were substantial material price increases in primary materials such as diesel fuel, steel, fabricated metals, lumber, concrete, rebar, copper, and PVC. Contractors are experiencing supply-chain issues, transportation issues, labor shortages, short pricing guarantees (1 to 7 days), labor shortages, premiums for labor craft to keep and retain craft workers, longer than average fabrication durations, and limited availability of material supplies, labor premiums to attract craft workers, the Russian invasion of Ukraine, Israel war, and tariffs. The tariffs on imported steel (50%) and aluminum (50%) could have a potential impact on construction projects. Material suppliers are announcing increases from 4% to 20% in material prices. This combination has produced a potentially volatile situation for owners as general contractors are drastically recovering costs. Contractors are extremely busy and continue to bid projects higher than normal. A project owner would be wise to ask many questions, work to obtain as much bid competition as possible, and retain a higher-than-usual contingency and market volatility adjustment factor.

REPORTS (SAGE/TIMBERLINE):

1. Rollup – Highest summary of costs, including contractor markups. This is typically by facility name or element of work.
2. Work Activity – Organized by CSI Division of Work. Includes a unique description of the work including dimensions, locations, quantities, and other useful information. This report includes contractor markups.
3. Detail Report with Markups – A detailed report that shows all associated line items that makeup the work activity. This report is organized by Rollup, CSI Divisions of Work, Work Activity and HDR Master Specification code. This report includes contractor markups.
4. Detail Direct Cost Report – A detailed report that show all associated line items but there are no contractor markups. The costs shown are direct costs. This report can be used for validation of material costs with quotations.
5. Estimate Totals – On the last sheet of the Detail Direct Cost Report. This shows all the markups used in the OPCC.
6. Escalation Report – Show the assumed project milestones for design, bid and award period, construction duration, percentage rate per year.

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Roll Up Report

Project name	26-05_City of Angleton_WWTP Blower Building_Concept_JH
Estimator	JH/ATL
Labor rate table	HDR_2026_OpenShop
Equipment rate table	HDR_EQ_2026
Report format	Sorted by 'WBS_MAIN' 'WBS_MAIN' summary Allocate addons

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Roll Up Report

Description	Quantity		Labor	Material	Subcontract	Equipment	Other	Total	
			Amount	Amount	Amount	Amount	Amount	Unit Cost	Amount
001.10 GENERAL REQUIREMENTS	10.00	MO	763	1,168	340,689	35		34,265.528/MO	342,655
005.15 SITE / CIVIL / STORMWATER	1.00	LS	17,239	39,077	9,017	11,677		77,009.88 /LS	77,010
160.18 BLOWER BUILDING	450.00	SF	435,539	549,516	43,679	763,452		3,982.638/SF	1,792,187

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Roll Up Report

Page 3
5/13/2026 9:36 AM
Design Stage:
Estimate Version: R01/May-13-2026

Estimate Totals

Description	Amount	Totals	Rate
Labor	453,541	3,280.023	I
Material	589,761		
Equipment	775,164	1,499.504	I
Subcontract	393,386		
Other			
Subtotal W/Subcontractor Costs	2,211,852	2,211,852	
Subtotal Costs		2,211,852	
Sales Tax Estimate (Mat & Eq)	58,640		8.250 %
Subtotal Costs	58,640	2,270,492	
Design Development Contingency	650,527		30.000 %
Subtotal Costs	650,527	2,921,019	
Escalation Project (Year)	189,715		6.730 %
Subtotal Costs	189,715	3,110,734	
Market Volatility Adjustment Factor	451,300		15.000 %
Subtotal Costs	451,300	3,562,034	
Electrical	415,196		12.000 %
Instrumentation and Controls	207,598		6.000 %
Construction Total	622,794	4,184,828	

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Summary Report

Project name	26-05_City of Angleton_WWTP Blower Building_Concept_JH
Estimator	JH/ATL
Labor rate table	HDR_2026_OpenShop
Equipment rate table	HDR_EQ_2026
Report format	Sorted by 'WBS_MAIN/MF04_DIV' 'MF04_DIV' summary Allocate addons

Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Summary Report

Description	Quantity	Labor		Material		Subcontract		Equipment		Other		Total	
		Amount		Amount		Amount		Amount		Amount		Unit Cost	Amount
001.10	GENERAL REQUIREMENTS												
DIVISION 01 GENERAL REQUIREMENTS	10.00 MO		763		1,168		340,689		35			34,265.528/MO	342,655
001.10 GENERAL REQUIREMENTS			763		1,168		340,689		35			34,265.528/MO	342,655
10.00 MO													
6.712 Labor hours													
0.585 Equipment hours													
005.15	SITE / CIVIL / STORMWATER												
DIVISION 02 EXISTING CONDITIONS	1.00 LS		8,203		8,927				5,145			22,274.86 /LS	22,275
DIVISION 31 EARTHWORK	1.00 LS		989						1,137			2,126.38 /LS	2,126
DIVISION 32 EXTERIOR IMPROVEMENTS	1.00 LS		8,047		30,149		9,017		5,395			52,608.64 /LS	52,609
005.15 SITE / CIVIL / STORMWATER			17,239		39,077		9,017		11,677			77,009.88 /LS	77,010
1.00 LS													
136.649 Labor hours													
81.807 Equipment hours													
160.18	BLOWER BUILDING												
DIVISION 02 EXISTING CONDITIONS	1.00 LS		249,767						756,552			1,006,319.27 /LS	1,006,319
DIVISION 03 CONCRETE	59.222 CY		41,320		67,156		8,517		1,660			2,003.540/CY	118,654
DIVISION 04 MASONRY	1,260.00 SF		51,352		29,781				897			65.103/SF	82,029
DIVISION 05 METALS	1.00 LS		37,528		206,884				1,638			246,049.25 /LS	246,049
DIVISION 07 THERMAL, MOISTURE PROTECTION	450.00 SF		13,351		15,880				116			65.216/SF	29,347
DIVISION 08 OPENINGS	2.00 EA		4,970		15,792							10,381.380/EA	20,763
DIVISION 23 HEATING, VENTILATING & AIR-CONDITIONING (HVAC)*	450.00 SF						35,162					78.138/SF	35,162
DIVISION 40 PROCESS INTEGRATION (EXPOSED PIPE, VALVES AND GATES)	85.00 LF		30,286		67,514				2,169			1,176.103/LF	99,969
DIVISION 41 MATERIAL PROCESSING & HANDLING EQUIPMENT	1.00 EA		6,965		146,509				421			153,894.950/EA	153,895
160.18 BLOWER BUILDING			435,539		549,516		43,679		763,452			3,982.638/SF	1,792,187
450.00 SF													
3,136.662 Labor hours													
1,417.111 Equipment hours													

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
 Summary Report

Page 3
 5/13/2026 9:36 AM
 Design Stage:
 Estimate Version: R01/May-13-2026

Estimate Totals

Description	Amount	Totals	Rate
Labor	453,541	3,280.023	↓
Material	589,761		
Equipment	775,164	1,499.504	↓
Subcontract	393,386		
Other			
Subtotal W/Subcontractor Costs	2,211,852	2,211,852	
Subtotal Costs		2,211,852	
Sales Tax Estimate (Mat & Eq)	58,640		8.250 %
Subtotal Costs	58,640	2,270,492	
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Escalation Project (Year)	189,715		6.730 %
Subtotal Costs	189,715	3,110,734	
Market Volatility Adjustment Factor	451,300		15.000 %
Subtotal Costs	451,300	3,562,034	
Electrical	415,196		12.000 %
Instrumentation and Controls	207,598		6.000 %
Construction Total	622,794	4,184,828	

Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Work Activity Report

Project name	26-05_City of Angleton_WWTP Blower Building_Concept_JH
Estimator	JH/ATL
Labor rate table	HDR_2026_OpenShop
Equipment rate table	HDR_EQ_2026
Report format	Sorted by 'WBS_MAIN/MF04_DIV/Work Activity' 'Work Activity' summary Allocate addons

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Work Activity Report

Description	Quantity			Labor	Material	Subcontract	Equipment	Other	Total	
				Amount	Amount	Amount	Amount	Amount	Unit Cost	Amount
001.10 GENERAL REQUIREMENTS										
DIVISION 01 GENERAL REQUIREMENTS										
01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.	45.00	SY		763	1,168		35		43.688/SY	1,966
01 88 03.000.100 Construction Phasing Costs	1.00	LS				340,689			340,689.34 /LS	340,689
DIVISION 01 GENERAL REQUIREMENTS				763	1,168	340,689	35		34,265.529/MO	342,655
10.00 MO										
6.712 Labor hours										
0.585 Equipment hours										
001.10 GENERAL REQUIREMENTS				763	1,168	340,689	35	0	34,265.529/MO	342,655
10.00 MO										
6.712 Labor hours										
0.585 Equipment hours										
005.15 SITE / CIVIL / STORMWATER										
DIVISION 02 EXISTING CONDITIONS										
02 41 00.020.110 General Site Demolition, Asphalt Pavement - 1,500 Sq. Ft.	167.00	SY		6,546	8,146		4,531		115.106/SY	19,223
02 41 06.000.105 Utility and Yard Pipe Demolition	40.00	LF		1,657	781		614		76.302/LF	3,052
DIVISION 02 EXISTING CONDITIONS				8,203	8,927		5,145		22,274.86 /LS	22,275
1.00 LS										
63.491 Labor hours										
50.624 Equipment hours										
DIVISION 31 EARTHWORK										
31 22 00.010 Site Grading - 1,500 Sq. Ft.	167.00	SY		989			1,137		12.733/SY	2,126
DIVISION 31 EARTHWORK				989			1,137		2,126.37 /LS	2,126
1.00 LS										
8.017 Labor hours										
4.009 Equipment hours										
DIVISION 32 EXTERIOR IMPROVEMENTS										
32 12 16.130.110 Asphalt Pavement Replacement Allowance, 04" binder x 02" wearing course x 2,500 Sq. Ft	277.778	SY		4,920	24,526		5,395		125.430/SY	34,842
32 16 13.013.100 Curb & gutter, Steel forms, 24" Wide x 6" High x 200 Linear feet	200.00	LF		3,127	5,623				43.749/LF	8,750
32 92 00.020.100 Landscaping Allowance	1.00	LS				9,017			9,017.23 /LS	9,017
DIVISION 32 EXTERIOR IMPROVEMENTS				8,047	30,149	9,017	5,395		52,608.66 /LS	52,609
1.00 LS										
65.141 Labor hours										
27.174 Equipment hours										

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Work Activity Report

Description	Quantity	Labor	Material	Subcontract	Equipment	Other	Total	Amount
		Amount	Amount	Amount	Amount	Amount	Unit Cost	
005.15 SITE / CIVIL / STORMWATER		17,239	39,077	9,017	11,677	0	77,009.89 /LS	77,010
1.00 LS								
136.649 Labor hours								
81.807 Equipment hours								
160.18 BLOWER BUILDING								
DIVISION 02 EXISTING CONDITIONS								
02 41 01.001.100 Relocate 3 Blowers - Flat bed trailer, 1 Truck Driver + 5 Man Crew x 3 Days each blower	9.00 DAY	249,767			756,552		111,813.253/DAY	1,006,319
DIVISION 02 EXISTING CONDITIONS		249,767			756,552		1,006,319.28 /LS	1,006,319
1.00 LS								
1,744.00 Labor hours								
1,260.00 Equipment hours								
DIVISION 03 CONCRETE								
03 12 00.000.100 Footings for Silts, 4' x 4' x 18" Thick	4.00 CY	1,360	2,428	8,517	59		3,091.135/CY	12,365
03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total	22.222 CY	22,628	27,872		713		2,304.662/CY	51,214
03 24 00.024.000 24" Elevated Slab x 450 Sq. Ft.	33.00 CY	16,675	27,312		565		1,350.084/CY	44,553
03 41 00.001.120 Precast double tee roof x 450 Sq. Ft.	450.00 SF	657	9,544		322		23.383/SF	10,522
DIVISION 03 CONCRETE		41,320	67,156	8,517	1,660		2,003.540/CY	118,654
59.222 CY								
330.204 Labor hours								
16.816 Equipment hours								
DIVISION 04 MASONRY								
04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet	1,260.00 SF	51,352	29,781		897		65.103/SF	82,029
DIVISION 04 MASONRY		51,352	29,781		897		65.103/SF	82,029
1,260.00 SF								
401.542 Labor hours								
16.442 Equipment hours								
DIVISION 05 METALS								
05 51 00.020.100 Aluminum Stairs, 4' Wide + Aluminum Landings	40.00 RISR	13,881	94,351		980		2,730.317/RISR	109,213
05 51 36.005.100 Metal Walkways, 400 Sq. Ft.	400.00 SF	16,255	61,255		136		194.115/SF	77,646
05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.	210.00 LF	7,391	51,278		522		281.860/LF	59,191
DIVISION 05 METALS		37,528	206,884		1,638		246,049.27 /LS	246,049
1.00 LS								
249.988 Labor hours								
38.494 Equipment hours								
DIVISION 07 THERMAL, MOISTURE PROTECTION								
07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.	4.50 SQ	13,351	15,880		116		6,521.56 /SQ	29,347

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Work Activity Report

Description	Quantity			Labor	Material	Subcontract	Equipment	Other	Total	
				Amount	Amount	Amount	Amount	Amount	Unit Cost	Amount
DIVISION 07 THERMAL, MOISTURE PROTECTION				13,351	15,880		116		65.216/SF	29,347
450.00 SF										
102.814 Labor hours										
2.077 Equipment hours										
DIVISION 08			OPENINGS							
08 11 16.030.110 Aluminum Doors & Frames - 3' x 7' x 1 Total	1.00	EA		1,509	3,485				4,993.84 /EA	4,994
08 33 23.005.110 Aluminum Rolling Overhead Doors - 14' x 14' x 1 Total	1.00	EA		3,462	12,307				15,768.93 /EA	15,769
DIVISION 08 OPENINGS				4,970	15,792				10,381.385/EA	20,763
2.00 EA										
33.571 Labor hours										
DIVISION 23			HEATING, VENTILATING & AIR-CONDITIONING (HVAC)*							
23.00.00.011 HVAC Allowance						35,162				35,162
DIVISION 23 HEATING, VENTILATING & AIR-CONDITIONING (HVAC)*						35,162			78.138/SF	35,162
450.00 SF										
DIVISION 40			PROCESS INTEGRATION (EXPOSED PIPE, VALVES AND GATES)							
40 05 23.112.100 Stainless Steel, Welded 316, 12" Dia.	85.00	LF		20,422	58,002		1,550		940.859/LF	79,973
40 05 23.112.110 Connect 12" Header to Existing	1.00	EA		524	1,090		54		1,668.13 /EA	1,668
40 05 23.212.100 Fittings - Stainless Steel, 12" Dia	8.00	EA		9,341	8,422		565		2,290.953/EA	18,328
DIVISION 40 PROCESS INTEGRATION (EXPOSED PIPE, VALVES AND GATES)				30,286	67,514		2,169		1,176.103/LF	99,969
85.00 LF										
232.042 Labor hours										
80.781 Equipment hours										
DIVISION 41			MATERIAL PROCESSING & HANDLING EQUIPMENT							
41 22 13.130.100 Bridge Cranes	1.00	EA		6,965	146,509		421		153,894.920/EA	153,895
DIVISION 41 MATERIAL PROCESSING & HANDLING EQUIPMENT				6,965	146,509		421		153,894.920/EA	153,895
1.00 EA										
42.50 Labor hours										
2.50 Equipment hours										
160.18 BLOWER BUILDING				435,539	549,516	43,679	763,452	0	3,982.638/SF	1,792,187
450.00 SF										
3,136.662 Labor hours										
1,417.111 Equipment hours										

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
 Work Activity Report

Estimate Totals

Description	Amount	Totals	Rate
Labor	453,541	3,280.023	↓
Material	589,761		
Equipment	775,164	1,499.504	↓
Subcontract	393,386		
Other			
Subtotal W/Subcontractor Costs	2,211,852	2,211,852	
Subtotal Costs		2,211,852	
Sales Tax Estimate (Mat & Eq)	58,640		8.250 %
Subtotal Costs	58,640	2,270,492	
Design Development Contingency	650,527		30.000 %
Subtotal Costs	650,527	2,921,019	
Escalation Project (Year)	189,715		6.730 %
Subtotal Costs	189,715	3,110,734	
Market Volatility Adjustment Factor	451,300		15.000 %
Subtotal Costs	451,300	3,562,034	
Electrical	415,196		12.000 %
Instrumentation and Controls	207,598		6.000 %
Construction Total	622,794	4,184,828	

Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report with Contractor Markups

Project name 26-05_City of Angleton_WWTP Blower Building_Concept_JH

Estimator JH/ATL

Labor rate table HDR_2026_OpenShop

Equipment rate table HDR_EQ_2026

Report format Sorted by 'WBS_MAIN/MF04_DIV/HDR04SPEC/Work Activity'
'Detail' summary
Allocate addons

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
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Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
			Amount	Amount	Amount		Amount	Amount	Unit Cost	
001.10 GENERAL REQUIREMENTS										
DIVISION 01 GENERAL REQUIREMENTS										
01 55 00.000 Staging										
01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.										
0100	Temporary, roads, gravel fill, 8" gravel depth, excl surfacing	45.00 SY	408	792	-		35	-	27.44 /SY	1,235
0200	Temporary fencing, chain link, rented up to 12 months, 6' high, 11 ga, to 1000'	80.00 lf	354	377	-		-	-	9.139 /lf	731
01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.			763	1,168			35		43.687/SY	1,966
45.00 SY										
6.712 Labor hours										
0.585 Equipment hours										
01 55 00.000 Staging			763	1,168	0		35	0	196.593/MO	1,966
10.00 MO										
6.712 Labor hours										
0.585 Equipment hours										
01 88 03.000 Construction Phasing Costs										
01 88 03.000.100 Construction Phasing Costs										
1910	Construction Phasing Costs	1.00 LS		0	340,689			-	340,689.36 /LS	340,689
01 88 03.000.100 Construction Phasing Costs					340,689				340,689.36 /LS	340,689
1.00 LS										
01 88 03.000 Construction Phasing Costs			0	0	340,689		0	0	340,689.36 /LS	340,689
1.00 LS										
DIVISION 01 GENERAL REQUIREMENTS			763	1,168	340,689		35	0	34,265.529/MO	342,655
10.00 MO										
6.712 Labor hours										
0.585 Equipment hours										

City of Angleton_WWTP Blower Building_Concept

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Design Stage:

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Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	
			Amount	Amount	Amount		Amount	Amount	Unit Cost	Amount
001.10 GENERAL REQUIREMENTS			763	1,168	340,689		35	0	34,265.529/MO	342,655
10.00 MO										
6.712 Labor hours										
0.585 Equipment hours										
005.15			SITE / CIVIL / STORMWATER							
DIVISION 02			EXISTING CONDITIONS							
02 41 00.020			General Site Demolition, Asphalt Pavement							
02 41 00.020.110			General Site Demolition, Asphalt Pavement - 1,500 Sq. Ft.							
n	5050	Demolish, remove pavement & curb, remove bituminous pavement, 4" to 6" thick, excludes hauling and disposal fees - Union	167.00 SY	5,133	-	-	2,857	-	47.842 /SY	7,990
	0100	Selective demolition, dump charges, typical urban city, building construction materials, includes tipping fees only	56.00 ton	-	8,095	-	-	-	144.555 /ton	8,095
	0015	Selective demolition, saw cutting, asphalt, up to 3" deep - Open Shop	200.00 LF	416	39	-	456	-	4.555 /LF	911
	0020	Selective demolition, saw cutting, each additional inch of depth over 3" - Open Shop	200.00 lf	243	12	-	266	-	2.602 /lf	520
	0560	Hauling,excavated borrow material,loose cubic yards,20 mile round trip,0.4 load/hr,base wide rate,12 cy truck,highway haulers,excludes loading	28.00 CY	754	-	-	952	-	60.949 /CY	1,707
	02 41 00.020.110 General Site Demolition, Asphalt Pavement - 1,500 Sq. Ft.			6,546	8,146		4,531		115.106/SY	19,223
	167.00 SY									
50.348 Labor hours										
44.795 Equipment hours										
02 41 00.020 General Site Demolition, Asphalt Pavement				6,546	8,146	0	4,531	0		19,223
50.348 Labor hours										
44.795 Equipment hours										
02 41 06.000			Utility and Yard Pipe Demolition							
02 41 06.000.105			Utility and Yard Pipe Demolition							
n	1100	Selective demolition, water & sewer piping & fittings, ductile iron pipe, 6"-12", diameter, excludes excavation	40.00 LF	1,132	-	-	249	-	34.519 /LF	1,381
	1136	Demo materials, haul off site w/ disposal fees	1.00 LOAD	525	781	-	365	-	1,671.34 /LOAD	1,671

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

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Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	
			Amount	Amount	Amount		Amount	Amount	Unit Cost	Amount
	02 41 06.000.105 Utility and Yard Pipe Demolition		1,657	781			614		76.302/LF	3,052
	40.00 LF									
	13.143 Labor hours									
	5.829 Equipment hours									
	02 41 06.000 Utility and Yard Pipe Demolition		1,657	781	0		614	0	76.302/LF	3,052
	40.00 LF									
	13.143 Labor hours									
	5.829 Equipment hours									
	DIVISION 02 EXISTING CONDITIONS		8,203	8,927	0		5,145	0	22,274.86 /LS	22,275
	1.00 LS									
	63.491 Labor hours									
	50.624 Equipment hours									
DIVISION 31			EARTHWORK							
31 22 00.000			Site Grading							
31 22 00.010			Site Grading - 1,500 Sq. Ft.							
0012	Fine grading, finish grading, small area, to be paved with grader - 20% adjustment for low qty	167.00 SY	989	-	-		1,137	-	12.733 /SY	2,126
	31 22 00.010 Site Grading - 1,500 Sq. Ft.		989				1,137		12.733/SY	2,126
	167.00 SY									
	8.017 Labor hours									
	4.009 Equipment hours									
	31 22 00.000 Site Grading		989	0	0		1,137	0	12.733/SY	2,126
	167.00 SY									
	8.017 Labor hours									
	4.009 Equipment hours									
	DIVISION 31 EARTHWORK		989	0	0		1,137	0	2,126.39 /LS	2,126
	1.00 LS									
	8.017 Labor hours									
	4.009 Equipment hours									
DIVISION 32			EXTERIOR IMPROVEMENTS							

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

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Angleton WTP

Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract		Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
<i>32 12 16.130 Plant-Mix Asphalt Paving</i>										
<i>32 12 16.130.110 Asphalt Pavement Replacement Allowance, 04" binder x 02" wearing course x 2,500 Sq. Ft.</i>										
0100	Aggregate for earthwork, bank run gravel, spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction	93.00 lcy	541	2,524	-		878	-	42.398 /lcy	3,943
0012	Fine grading, finish grading, small area, to be paved with grader	277.778 sy	1,371	-	-		1,576	-	10.609 /sy	2,947
5020	Compaction, riding, vibrating roller, 3 passes, 6" lifts	93.00 bcy	63	-	-		50	-	1.212 /bcy	113
0200	Plant-mix asphalt paving, for highways and large paved areas, binder course, 4" thick, no hauling included	277.778 SY	684	14,107	-		387	-	54.642 /SY	15,178
0380	Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included	277.778 sy	496	7,895	-		275	-	31.196 /sy	8,666
n 0560	Hauling, asphalt material, loose cubic yards, 20 mile round trip, 0.4 load/hr, base wide rate, 12 cy truck, highway haulers, excludes loading	71.00 lcy	1,766	-	-		2,229	-	56.269 /lcy	3,995
<i>32 12 16.130.110 Asphalt Pavement Replacement Allowance, 04" binder x 02" wearing course x 2,500 Sq. Ft.</i>			4,920	24,526			5,395		125.430/SY	34,842
277.778 SY										
40.608 Labor hours										
27.174 Equipment hours										
<i>32 12 16.130 Plant-Mix Asphalt Paving</i>			4,920	24,526	0		5,395	0	125.430/SY	34,842
277.778 SY										
40.608 Labor hours										
27.174 Equipment hours										
<i>32 16 13.013 Cast-In-Place Concrete Curbs and Gutters</i>										
<i>32 16 13.013.100 Curb & gutter, Steel forms, 24" Wide x 6" High x 200 Linear feet</i>										
2050	Expansion joint, premolded, bituminous fiber, 1" x 12"	200.00 lf	697	1,097	-		-	-	8.969 /lf	1,794
0441	Cast-in place concrete curbs & gutters, radius steel forms, 6" high curb, 6" thick gutter, 24" wide, radius, includes concrete	200.00 LF	2,429	4,527	-		-	-	34.780 /LF	6,956
<i>32 16 13.013.100 Curb & gutter, Steel forms, 24" Wide x 6" High x 200 Linear feet</i>			3,127	5,623					43.749/LF	8,750
200.00 LF										
24.533 Labor hours										

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	
			Amount	Amount	Amount		Amount	Amount	Unit Cost	Amount
	32 16 13.013 Cast-In-Place Concrete Curbs and Gutters		3,127	5,623	0		0	0	43.749/LF	8,750
	200.00 LF									
	24.533 Labor hours									
32 92 00.020 Landscaping Allowance										
32 92 00.020.100 Landscaping Allowance										
0920	Landscaping Allowance	1.00 LS			9,017				9,017.25 /LS	9,017
	32 92 00.020.100 Landscaping Allowance				9,017				9,017.25 /LS	9,017
	1.00 LS									
	32 92 00.020 Landscaping Allowance		0	0	9,017		0	0	9,017.25 /LS	9,017
	1.00 LS									
DIVISION 32 EXTERIOR IMPROVEMENTS			8,047	30,149	9,017		5,395	0	52,608.66 /LS	52,609
1.00 LS										
	65.141 Labor hours									
	27.174 Equipment hours									
005.15 SITE / CIVIL / STORMWATER			17,239	39,077	9,017		11,677	0	77,009.91 /LS	77,010
1.00 LS										
	136.649 Labor hours									
	81.807 Equipment hours									

160.18 BLOWER BUILDING

DIVISION 02 EXISTING CONDITIONS

02 41 01.001	Relocations												
02 41 01.001.100	Relocate 3 Blowers - Flat bed trailer, 1 Truck Driver + 5 Man Crew x 3 Days each blower												
	1900 Rent crane truck mount, cable 8x4 drive 40 ton, 12' radius	150.00 day	-	-	-				752,450	-		5,016.334 /day	752,450
	1700 Mobilization or demobilization, crane, truck-mounted, up to 75 ton, (driver only)	2.00 ea	617	-	-				-	-		308.69 /ea	617
n	5000 Crane Operator	150.00 day	185,210	-	-				-	-		1,234.735 /day	185,210
n	0220 Relocate blowers - 6 Man Crew x 3 Days each blower	9.00 DAY	63,939	-	-				-	-		7,104.373 /DAY	63,939
	1485 (TRL2) Flatbed Trailer, 40 Ton - 10 hours x 6 days	60.00 mh	-	-	-				4,102	-		68.370 /mh	4,102

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract		Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
	02 41 01.001.100 Relocate 3 Blowers - Flat bed trailer, 1 Truck Driver + 5 Man Crew x 3 Days each blower		249,767				756,552		111,813.247 /DAY	1,006,319
	9.00 DAY									
	1,744.00 Labor hours									
	1,260.00 Equipment hours									
	02 41 01.001 Relocations		249,767	0	0		756,552	0	111,813.247 /DAY	1,006,319
	9.00 DAY									
	1,744.00 Labor hours									
	1,260.00 Equipment hours									
	DIVISION 02 EXISTING CONDITIONS		249,767	0	0		756,552	0	1,006,319.22 /LS	1,006,319
	1.00 LS									
	1,744.00 Labor hours									
	1,260.00 Equipment hours									
DIVISION 03			CONCRETE							
03 12 00.000			Cast-In-Place Concrete, Pad Footings							
03 12 00.000.100			Footings for Silts, 4' x 4' x 18" Thick							
	3061 C. I. P. concrete forms, foundation, edge, wood, over 12", 4 use, includes erecting, bracing, stripping and cleaning	24.00 sfca	258	29	-		-	-	11.945 /sfca	287
n	2005 Reinforcing steel, unload and sort, add to base_FOUNDATIONS	0.45 ton	34	-	-		18	-	114.56 /ton	52
n	2211 Reinforcing steel, crane cost for handling, average, add_FOUNDATIONS	0.45 ton	37	-	-		19	-	124.511 /ton	56
n	0605 Reinforcing steel, in place, FOUNDATIONS, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	0.45 ton	858	713	-		-	-	3,490.50 /ton	1,571
n	4652 Structural concrete, placing, foundations, pumped, over 6" thick, includes vibrating, excludes material	4.00 cy	148	-	-		20	-	42.085 /cy	168
n	4652 Structural concrete, placing, foundations, pumped, over 6" thick, includes vibrating, excludes material	0.40 cy	15	-	-		2	-	42.05 /cy	17
n	0300 Struct FOUNDATION concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	4.00 CY	-	1,533	-		-	-	383.278 /CY	1,533

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

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Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor			Material			Subcontract			Equipment			Other			Total	
			Amount			Amount			Amount			Amount			Amount			Unit Cost	Amount
03 12 00.000.100 Footings for Silts, 4' x 4' x 18" Thick																			
n	0300	Struct FOUNDATION concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	0.40	cy	-		153	-			-		-		-		383.25 /cy	153	
n	0105	Concrete finishing, floors, manual screed, bull float_FOUNDATIONS	16.00	sf	11		-	-			-		-		-		0.672 /sf	11	
n	0105	Earthwork allowance	1.00	ls			-	8,517			-		-		-		8,517.25 /ls	8,517	
03 12 00.000.100 Footings for Silts, 4' x 4' x 18" Thick					1,360		2,428		8,517			59		-			3,091.143/CY	12,365	
4.00 CY																			
10.599 Labor hours																			
0.646 Equipment hours																			
03 12 00.000 Cast-In-Place Concrete, Pad Footings					1,360		2,428		8,517			59		0			3,091.143/CY	12,365	
4.00 CY																			
10.599 Labor hours																			
0.646 Equipment hours																			
03 23 30.030 CIP Square Column 30"																			
03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total																			
	6650	C.I.P. concrete forms, column, square, plywood, 24" x 24", 4 use, includes erecting, bracing, stripping and cleaning	530.00	sfca	8,380		1,517	-			-		-		-		18.674 /sfca	9,897	
n	0202	Ties, for coil tie system, for CIP column forms, 1/2", 6000#, 36", includes material only	4.00	c	-		3,237	-			-		-		-		809.135 /c	3,237	
n	2030	Reinforcing steel, unload and sort, add to base_COLUMNS	5.556	ton	417		-	-			-		220		-		114.546 /ton	636	
n	2216	Reinforcing steel, crane cost for handling, average, add_COLUMNS	5.556	ton	453		-	-			-		239		-		124.51 /ton	692	
	0250	Reinforcing steel, in place, columns, #8 to #18, A615, grade 60, incl labor for accessories, excl material for accessories	5.556	ton	10,592		13,723	-			-		-		-		4,376.316 /ton	24,315	
	0600	Structural concrete, placing, column, square or round, pumped, 18" thick, includes leveling (strike off) & consolidation, excludes material	22.222	cy	1,691		-	-			-		231		-		86.509 /cy	1,922	
	0600	Structural concrete, placing, column, square or round, pumped, 18" thick, includes leveling (strike off) & consolidation, excludes material	2.222	cy	169		-	-			-		23		-		86.52 /cy	192	
n	0625	Struct COLUMNS concrete,ready mix,normal wt,4500 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	22.222	CY	-		8,517	-			-		-		-		383.275 /CY	8,517	
n	0625	Struct COLUMNS concrete,ready mix,normal wt,4500 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	2.222	cy	-		852	-			-		-		-		383.27 /cy	852	

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
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Design Stage:

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Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract		Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
03 23 24.030.110	Stilts, CIP Square Column 30" x 24' Ht. x 4 Total									
n	0022 Concrete finishing, columns, includes breaking ties and patching voids	530.00 sf	927	27	-		-	-	1.800 /sf	954
	03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total		22,628	27,872			713		2,304.662/CY	51,214
	22.222 CY									
	180.286 Labor hours									
	7.446 Equipment hours									
	03 23 30.030 CIP Square Column 30"		22,628	27,872	0		713	0	2,304.662/CY	51,214
	22.222 CY									
	180.286 Labor hours									
	7.446 Equipment hours									
03 24 00.024	24" Elevated Slab									
03 24 00.024.000	24" Elevated Slab x 450 Sq. Ft.									
	6600 Scaffolding, steel tubular, heavy duty shoring for elevated slab forms, floor area, labor only to erect & dismantle, to 14'-8" high	5.00 csf	1,976	-	-		-	-	395.132 /csf	1,976
	6610 Scaffolding, steel tubular, heavy duty shoring for elevated slab forms, floor area, rent/month of materials only, to 14'-8" high	14.00 csf	-	1,932	-		-	-	137.979 /csf	1,932
	2150 C.I.P. concrete forms, elevated slab, flat slab with drop panels, to 15' high, 4 use, includes shoring, erecting, bracing, stripping and cleaning	450.00 sf	4,781	2,200	-		-	-	15.513 /sf	6,981
	7000 C.I.P. concrete forms, elevated slab, edge forms, to 6" high, 4 use, includes shoring, erecting, bracing, stripping and cleaning	90.00 lf	677	74	-		-	-	8.344 /lf	751
n	2040 Reinforcing steel, unload and sort, add to base_ELEVATE SLABS	3.713 ton	278	-	-		147	-	114.541 /ton	425
n	2218 Reinforcing steel, crane cost for handling, average, add_ELEVATED SLABS	3.713 ton	303	-	-		160	-	124.506 /ton	462
	0400 Reinforcing steel, in place, elevated slabs, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	3.713 ton	5,614	9,171	-		-	-	3,981.904 /ton	14,785
	1500 Structural concrete, placing, elevated slab, pumped, 6" to 10" thick, includes leveling (strike off) & consolidation, excludes material	3.30 cy	141	-	-		19	-	48.67 /cy	161
	1500 Structural concrete, placing, elevated slab, pumped, 6" to 10" thick, includes leveling (strike off) & consolidation, excludes material	33.00 cy	1,413	-	-		193	-	48.660 /cy	1,606
n	0825 Struct ELEV SLAB concrete,ready mix,normal wt,4500 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	3.30 cy	-	1,265	-		-	-	383.28 /cy	1,265

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Detail Report with Contractor Markups

Item	Description	Takeoff Qty		Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
				Amount	Amount	Amount		Amount	Amount	Unit Cost	
03 24 00.024.00024" Elevated Slab x 450 Sq. Ft.											
n	0825	Struct ELEV SLAB concrete,ready mix,normal wt,4500 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	33.00	CY	-	12,648	-	-	-	383.275 /CY	12,648
n	0256	Concrete finishing, floors, manual screed, bull float, machine float & steel trowel (walk-behind)_ELEV SLAB	450.00	sf	706	-	-	46	-	1.670 /sf	752
n	9000	Concrete finishing, elev slabs, includes patching voids	450.00	sf	787	23	-	-	-	1.800 /sf	810
					16,675	27,312		565		1,350.085/CY	44,553
33.00 CY											
134.256 Labor hours											
8.162 Equipment hours											
03 24 00.024 24" Elevated Slab					16,675	27,312	0	565	0	1,350.085/CY	44,553
33.00 CY											
134.256 Labor hours											
8.162 Equipment hours											
03 41 00.001Precast Concrete - Tees											
03 41 00.001.120Precast double tee roof x 450 Sq. Ft.											
	0350	Precast tees, double, floor, 50' span, prestressed	450.00	SF	657	9,544	-	322	-	23.383 /SF	10,522
03 41 00.001.120 Precast double tee roof x 450 Sq. Ft.					657	9,544		322		23.383/SF	10,522
450.00 SF											
5.063 Labor hours											
0.563 Equipment hours											
03 41 00.001 Precast Concrete - Tees					657	9,544	0	322	0	23.383/SF	10,522
450.00 SF											
5.063 Labor hours											
0.563 Equipment hours											
DIVISION 03 CONCRETE					41,320	67,156	8,517	1,660	0	2,003.541/CY	118,654
59.222 CY											
330.204 Labor hours											
16.816 Equipment hours											
DIVISION 04MASONRY											

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
			Amount	Amount	Amount		Amount	Amount	Unit Cost	
04 22 01.012 Concrete Masonry Unit (12" CMU) - Exterior										
04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet										
0090	Scaffolding, steel tubular, regular, labor only to erect & dismantle, building exterior, wall face, 6'-4" x 5' frames, 1 to 5 stories, excludes planks	13.00 csf	5,522	-	-		-	-	424.797 /csf	5,522
0906	Scaffolding, steel tubular, regular, rent/month only for complete system for face of walls, 6' -4" x 5' frames, excludes planks	13.00 csf	-	2,971	-		-	-	228.552 /csf	2,971
2850	Scaffolding, steel tubular, regular, accessory, plank, rent/mo, 2" x 10" x 16' long	15.00 ea	-	410	-		-	-	27.349 /ea	410
0060	Grout, bond beams and lintels, 8" deep, 12" thick, 0.30 CF per LF, pumped, excludes blockwork	90.00 lf	353	411	-		38	-	8.916 /lf	802
0350	Grout, concrete masonry unit (CMU) cores, 12" thick, 0.422 CF/SF, pumped, excludes blockwork	1,260.00 sf	8,037	8,098	-		859	-	13.487 /sf	16,994
0020	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed horizontally, ASTM A615	297.396 lb	400	587	-		-	-	3.317 /lb	986
0060	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed vertically, ASTM A615	1,561.329 lb	2,583	3,080	-		-	-	3.627 /lb	5,664
n 0150	Concrete block,bond beam,normal weight,2000 psi,12"x8"x16",includes mortar,excludes scaffolding,horizontal reinforcing,vertical reinforcing and grout	90.00 lf	1,063	1,363	-		-	-	26.950 /lf	2,425
n 0300	Cnrc blk,extr,toold jnts both sides,norml wt,2000 psi,12"8"16",incld mortr and hrznt joint mfr every other cours,excld scffl,grout and vrtcl mfrn	1,260.00 SF	30,357	11,691	-		-	-	33.372 /SF	42,049
n 0300	Cnrc blk,extr,toold jnts both sides,norml wt,2000 psi,12"8"16",incld mortr and hrznt joint mfr every other cours,excld scffl,grout and vrtcl mfrn	126.00 sf	3,036	1,169	-		-	-	33.372 /sf	4,205
04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet			51,352	29,781			897		65.103/SF	82,029
1,260.00 SF										
401.542 Labor hours										
16.442 Equipment hours										
04 22 01.012 Concrete Masonry Unit (12" CMU) - Exterior			51,352	29,781	0		897	0	65.103/SF	82,029
1,260.00 SF										
401.542 Labor hours										
16.442 Equipment hours										
DIVISION 04 MASONRY			51,352	29,781	0		897	0	65.103/SF	82,029
1,260.00 SF										
401.542 Labor hours										
16.442 Equipment hours										

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty		Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
				Amount	Amount	Amount		Amount	Amount	Unit Cost	
DIVISION 05											
METALS											
05 51 00.020Metal Stairs - Aluminum											
05 51 00.020.100Aluminum Stairs, 4' Wide + Aluminum Landings											
0050	Stair, shop fabricated, steel, 4'-0" W, incl pipe railing, stringers, grating treads w/ safety nosing, per riser	40.00	RISR	6,429	40,241	-		454	-	1,178.096 /RISR	47,124
0210	Railing, pipe, aluminum, clear finish, 3 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	200.00	LF	7,039	48,836	-		497	-	281.860 /LF	56,372
0132	Floor grating, aluminum, 1-1/2" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., up to 300 S.F., field fabricated from panels	60.00	sf	413	5,274	-		29	-	95.279 /sf	5,717
05 51 00.020.100 Aluminum Stairs, 4' Wide + Aluminum Landings				13,881	94,351			980		2,730.316/RISR	109,213
40.00 RISR											
92.125 Labor hours											
23.031 Equipment hours											
05 51 00.020 Metal Stairs - Aluminum				13,881	94,351	0		980	0	2,730.316/RISR	109,213
40.00 RISR											
92.125 Labor hours											
23.031 Equipment hours											
05 51 36.005Metal Walkways											
05 51 36.005.100Metal Walkways, 400 Sq. Ft.											
0148	Floor grating, aluminum, 2-1/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., over 300 S.F., field fabricated from panels	400.00	SF	1,929	55,478	-		136	-	143.857 /SF	57,543
0020	Grating frame, aluminum, 1" to 1-1/2" D, field fabricated	210.00	lf	14,327	5,777	-		-	-	95.730 /lf	20,103
05 51 36.005.100 Metal Walkways, 400 Sq. Ft.				16,255	61,255			136		194.115/SF	77,646
400.00 SF											
108.812 Labor hours											
3.20 Equipment hours											
05 51 36.005 Metal Walkways				16,255	61,255	0		136	0	194.115/SF	77,646
400.00 SF											
108.812 Labor hours											
3.20 Equipment hours											

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

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Detail Report with Contractor Markups

Item	Description	Takeoff Qty	Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Unit Cost	Total Amount
<u>05 52 13.103 Aluminum Railings - 3 Rail</u>										
<u>05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.</u>										
0210	Railing, pipe, aluminum, clear finish, 3 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	210.00 LF	7,391	51,278	-		522	-	281.860 /LF	59,191
	05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.		7,391	51,278			522		281.860/LF	59,191
	210.00 LF									
	49.051 Labor hours									
	12.263 Equipment hours									
05 52 13.103 Aluminum Railings - 3 Rail			7,391	51,278	0		522	0	281.860/LF	59,191
	210.00 LF									
	49.051 Labor hours									
	12.263 Equipment hours									
DIVISION 05 METALS			37,528	206,884	0		1,637	0	246,049.25 /LS	246,049
	1.00 LS									
	249.988 Labor hours									
	38.494 Equipment hours									

DIVISION 07

THERMAL, MOISTURE PROTECTION

<u>07 54 19.010 PVC Membrane Roofing - Fully Adhered</u>										
<u>07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.</u>										
n	8890	Polyvinyl-chloride roofing, (PVC), heat welded seams, reinforced, 0.40 P.S.F., fully adhered with adhesive, 60 mils	4.50 SQ	1,197	1,675	-	116	-	663.796 /SQ	2,987
	0800	Aluminum coping, stock units, for 12" wall, excludes scaffolding	90.00 lf	2,259	406	-	-	-	29.609 /lf	2,665
	2780	2" x 8" miscellaneous wood blocking, to steel construction, per M.B.F.	0.195 mbf	1,052	410	-	-	-	7,494.20 /mbf	1,461
	2780	2" x 8" miscellaneous wood blocking, to steel construction, per M.B.F.	0.488 mbf	2,632	1,025	-	-	-	7,494.201 /mbf	3,657
	0200	Underlayment, plywood, underlayment grade, 5/8" thick	450.00 SF	1,093	3,707	-	-	-	10.666 /SF	4,800
	1725	Polyisocyanurate insulation, for roof decks, 2" thick, 2#/CF density, fastening excluded	450.00 sf	476	992	-	-	-	3.262 /sf	1,468
	1725	Polyisocyanurate insulation, for roof decks, 2" thick, 2#/CF density, fastening excluded	450.00 sf	476	992	-	-	-	3.262 /sf	1,468
	1745	Polyisocyanurate insulation, for roof decks, 3" thick, 2#/CF density, fastening excluded	450.00 sf	521	1,474	-	-	-	4.434 /sf	1,995

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty		Labor	Material	Subcontract	Name	Equipment	Other	Total	
				Amount	Amount	Amount		Amount	Amount	Amount	Unit Cost
07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.											
1745	Polyisocyanurate insulation, for roof decks, 3" thick, 2#/CF density, fastening excluded	450.00	sf	521	1,474	-		-	-	4.434 /sf	1,995
0100	Sheet metal flashing, aluminum, flexible, mill finish, .032" thick, including up to 4 bends	450.00	sf	3,123	3,727	-		-	-	15.222 /sf	6,850
07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.				13,351	15,880			116		6,521.564/SQ	29,347
4.50 SQ											
102.814 Labor hours											
2.077 Equipment hours											
07 54 19.010 PVC Membrane Roofing - Fully Adhered				13,351	15,880	0		116	0	65.216/SF	29,347
450.00 SF											
102.814 Labor hours											
2.077 Equipment hours											
DIVISION 07 THERMAL, MOISTURE PROTECTION				13,351	15,880	0		116	0	65.216/SF	29,347
450.00 SF											
102.814 Labor hours											
2.077 Equipment hours											

DIVISION 08

OPENINGS

<i>08 11 16.030 Aluminum Doors & Frames (3070)</i>											
<i>08 11 16.030.110 Aluminum Doors & Frames - 3' x 7' x 1 Total</i>											
1000	Frames, steel, knock down, hollow metal, single, 16 ga., up to 4-7/8" deep, 3'-0" x 7'-0"	1.00	EA	142	381	-		-	-	522.53 /EA	523
5050	Doors, aluminum, commercial entrance, flush panel doors, single, 3'-0" x 7'-0", incl. hinges, push/pull, deadlock, cylinder, threshold, excl. glazing	1.00	ea	955	1,680	-		-	-	2,634.93 /ea	2,635
3000	Door hardware, panic device, narrow stile, mortise bar, exit only	1.00	ea	283	1,172	-		-	-	1,455.26 /ea	1,455
0011	Thresholds, aluminum, 3' long door saddles	3.00	lf	71	71	-		-	-	47.14 /lf	141
1430	Door hardware, hinges, full mortise, high frequency, brass base, US10, 4-1/2" x 4-1/2"	1.50	pr	-	177	-		-	-	118.187 /pr	177
1200	Paints & coatings, exterior, door & frame, one side, flush, 1 coat, 3' x 7'	1.00	ea	58	4	-		-	-	62.41 /ea	62
	<i>08 11 16.030.110 Aluminum Doors & Frames - 3' x 7' x 1 Total</i>			1,508	3,485					4,993.83 /EA	4,994
	1.00 EA										

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report with Contractor Markups

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
			Amount	Amount	Amount		Amount	Amount	Unit Cost	
08 11 16.030.110 Aluminum Doors & Frames - 3' x 7' x 1										
Total			1,508	3,485					4,993.83 /EA	4,994
1.00 EA										
10.371 Labor hours										
08 11 16.030 Aluminum Doors & Frames (3070)			1,508	3,485	0		0	0	4,993.83 /EA	4,994
1.00 EA										
10.371 Labor hours										
08 33 23.005 Aluminum Rolling Overhead Doors										
08 33 23.005.110 Aluminum Rolling Overhead Doors - 14' x 14' x 1 Total										
0500	Doors, rolling service, steel, manual, 20 gauge, 14' x 14' high, incl. hardware	1.00 ea	2,984	6,300	-		-	-	9,284.18 /ea	9,284
3300	Doors, rolling service, steel, manual, for enamel finish, add	168.00 sf	-	722	-		-	-	4.298 /sf	722
3700	Doors, rolling service, steel, manual, for safety edge bottom bar, electric, add	14.00 lf	-	1,231	-		-	-	87.906 /lf	1,231
4000	Doors, rolling service, steel, manual, for weatherstripping, extruded rubber, jambs, add	38.00 lf	-	1,165	-		-	-	30.669 /lf	1,165
4500	Doors, rolling service, steel, manual, motor operators for, to 14' x 12' opening	1.00 EA	478	2,344	-		-	-	2,821.63 /EA	2,822
4700	Doors, rolling service, steel, manual, for fire door, additional fusible link, add	9.00 ea	-	545	-		-	-	60.557 /ea	545
08 33 23.005.110 Aluminum Rolling Overhead Doors - 14' x 14' x 1 Total			3,462	12,307					15,768.92 /EA	15,769
1.00 EA										
23.20 Labor hours										
08 33 23.005 Aluminum Rolling Overhead Doors			3,462	12,307	0		0	0	15,768.92 /EA	15,769
1.00 EA										
23.20 Labor hours										
DIVISION 08 OPENINGS			4,970	15,792	0		0	0	10,381.375/EA	20,763
2.00 EA										
33.571 Labor hours										

DIVISION 23 HEATING, VENTILATING & AIR-CONDITIONING (HVAC)*

23 00 00.000 HVAC \$ PER SF

23.00.00.011 HVAC Allowance

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

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Angleton WTP

Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty		Labor	Material	Subcontract	Name	Equipment	Other	Total	
				Amount	Amount			Amount	Amount	Unit Cost	Amount
23.00.00.011	HVAC Allowance										
n	0600 HVAC Allowance - Process Area Ventillation	450.00	SF			35,162			-	78.138 /SF	35,162
	23.00.00.011 HVAC Allowance					35,162					35,162
	23 00 00.000 HVAC \$ PER SF			0	0	35,162		0	0	78.138/SF	35,162
	450.00 SF										
	DIVISION 23 HEATING, VENTILATING & AIR-CONDITIONING (HVAC)*			0	0	35,162		0	0	78.138/SF	35,162
	450.00 SF										

DIVISION 40 PROCESS INTEGRATION (EXPOSED PIPE, VALVES AND GATES)

40 05 23.112	Pipe - Stainless Steel, 12" Dia										
40 05 23.112.100	Stainless Steel, Welded 316, 12" Dia.										
n	7001 Pipeline Testing, Hydro (LF)	85.00	lf	457	11	-		36	-	5.931 /lf	504
	1200 Piping system identification labels, pipe markers, indicate contents and flow direction, self adhesive, over 10" pipe size	10.00	ea	223	74	-		-	-	29.705 /ea	297
	8480 Pipe, stainless steel, welded, 12" pipe size, schedule 40, type 316, includes weld joint and clevis type hangers 10' OC	85.00	LF	13,368	57,917	-		913	-	849.384 /LF	72,198
	9210 Pipe, stainless steel, schedules 40 and 80, pipe, labor only, 12" pipe size, threading one end	4.25	ea	701	-	-		-	-	164.94 /ea	701
	9660 Pipe, stainless steel, schedule 40, welding labor, per joint, 12" pipe size, making the weld, includes the weld machine	4.25	ea	5,673	-	-		601	-	1,476.028 /ea	6,273
	40 05 23.112.100 Stainless Steel, Welded 316, 12" Dia.			20,422	58,002			1,550		940.859/LF	79,973
	85.00 LF										
	157.265 Labor hours										
	57.728 Equipment hours										
40 05 23.112.110	Connect 12" Header to Existing										
	6656 Connect 12" Header to Existing	1.00	EA	524	1,090	-		54	-	1,668.12 /EA	1,668
	40 05 23.112.110 Connect 12" Header to Existing			524	1,090			54		1,668.12 /EA	1,668
	1.00 EA										
	4.00 Labor hours										
	2.00 Equipment hours										

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report with Contractor Markups

Item	Description	Takeoff Qty	Labor		Material		Subcontract		Equipment		Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount			
	40 05 23.112 Pipe - Stainless Steel, 12" Dia		20,946	59,092	0			1,603	0	960.484/LF		81,641	
	85.00 LF												
	161.265 Labor hours												
	59.728 Equipment hours												
40 05 23.212	Fittings - Stainless Steel, 12" Dia												
40 05 23.212.100	Fittings - Stainless Steel, 12" Dia												
0720	Gasket and bolt set, for flanges, 150 lb., 12" pipe size	4.00 EA	1,063	620	-			-	-	420.863 /EA		1,683	
6656	Flange, stainless steel, welded, weld neck, 150 lb., 12" diam., type 304, includes making the weld and weld machine	2.00 EA	2,759	2,180	-			188	-	2,563.930 /EA		5,128	
n 3400	Elbow, 90 Deg., stainless steel, long, butt weld, 12", schedule 40, type 304, includes the weld machine	2.00 EA	5,518	5,621	-			377	-	5,758.15 /EA		11,516	
	40 05 23.212.100 Fittings - Stainless Steel, 12" Dia		9,341	8,422				565		2,290.951/EA		18,328	
	8.00 EA												
	70.777 Labor hours												
	21.053 Equipment hours												
	40 05 23.212 Fittings - Stainless Steel, 12" Dia		9,341	8,422	0			565	0	2,290.951/EA		18,328	
	8.00 EA												
	70.777 Labor hours												
	21.053 Equipment hours												
	DIVISION 40 PROCESS INTEGRATION (EXPOSED PIPE, VALVES AND GATES)		30,286	67,514	0			2,169	0	1,176.103/LF		99,969	
	85.00 LF												
	232.042 Labor hours												
	80.781 Equipment hours												

DIVISION 41 MATERIAL PROCESSING & HANDLING EQUIPMENT

41 22 13.130	Bridge Cranes												
41 22 13.130.100	Bridge Cranes												
0325	Overhead bridge crane, under hung hoist, electric operating, 1 girder, 15 ton, 30' span	1.00 EA	6,965	146,509	-				421	-	153,894.950 /EA	153,895	

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
			Amount	Amount	Amount		Amount	Amount	Unit Cost	
41 22 13.130.100	Bridge Cranes		6,965	146,509			421		153,894.950/EA	153,895
	1.00 EA									
	42.50 Labor hours									
	2.50 Equipment hours									
41 22 13.130	Bridge Cranes		6,965	146,509	0		421	0	153,894.950/EA	153,895
	1.00 EA									
	42.50 Labor hours									
	2.50 Equipment hours									
DIVISION 41 MATERIAL PROCESSING & HANDLING EQUIPMENT			6,965	146,509	0		421	0	153,894.950/EA	153,895
	1.00 EA									
	42.50 Labor hours									
	2.50 Equipment hours									
160.18	BLOWER BUILDING		435,539	549,516	43,679		763,452	0	3,982.638/SF	1,792,187
	450.00 SF									
	3,136.662 Labor hours									
	1,417.111 Equipment hours									

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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Detail Report with Contractor Markups

Estimate Totals

Description	Amount	Totals	Rate
Labor	453,541	3,280.023 †	
Material	589,761		
Equipment	775,164	1,499.504 †	
Subcontract	393,386		
Other			
Subtotal W/Subcontractor Costs	2,211,852	2,211,852	
Subtotal Costs		2,211,852	
Sales Tax Estimate (Mat & Eq)	58,640		8.250 %
Subtotal Costs	58,640	2,270,492	
Design Development Contingency	650,527		30.000 %
Subtotal Costs	650,527	2,921,019	
Escalation Project (Year)	189,715		6.730 %
Subtotal Costs	189,715	3,110,734	
Market Volatility Adjustment Factor	451,300		15.000 %
Subtotal Costs	451,300	3,562,034	
Electrical	415,196		12.000 %
Instrumentation and Controls	207,598		6.000 %
Construction Total	622,794	4,184,828	

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

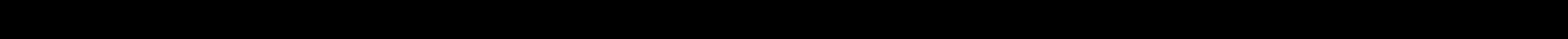
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Angleton WTP

Detail Report - Direct Costs



Project name	26-05_City of Angleton_WWTP Blower Building_Concept_JH
Estimator	JH/ATL
Labor rate table	HDR_2026_OpenShop
Equipment rate table	HDR_EQ_2026
Report format	Sorted by 'WBS_MAIN/MF04_DIV/HDR04SPEC/Work Activity' 'Detail' summary



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Angleton WTP

Design Stage:

Detail Report - Direct Costs

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor		Material		Subcontract		Name	Equipment		Other		Total	
			Amount	Amount	Amount	Amount	Amount	Amount		Amount	Unit Cost	Amount			
001.10 GENERAL REQUIREMENTS															
DIVISION 01 GENERAL REQUIREMENTS															
01 55 00.000 Staging															
01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.															
0100	Temporary, roads, gravel fill, 8" gravel depth, excl surfacing	45.00	SY	240	465	-		21	-	16.108 /SY	725				
0200	Temporary fencing, chain link, rented up to 12 months, 6' high, 11 ga, to 1000'	80.00	lf	208	221	-		-	-	5.365 /lf	429				
01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.				448	686			21		25.646/SY	1,154				
45.00 SY															
6.712 Labor hours															
0.585 Equipment hours															
01 55 00.000 Staging				448	686	0		21	0	115.409/MO	1,154				
10.00 MO															
6.712 Labor hours															
0.585 Equipment hours															
01 88 03.000 Construction Phasing Costs															
01 88 03.000.100 Construction Phasing Costs															
1910	Construction Phasing Costs	1.00	LS	0	200,000				-	200,000.000 /LS	200,000				
01 88 03.000.100 Construction Phasing Costs					200,000					200,000.000/LS	200,000				
1.00 LS															
01 88 03.000 Construction Phasing Costs				0	0	200,000		0	0	200,000.000/LS	200,000				
1.00 LS															
DIVISION 01 GENERAL REQUIREMENTS				448	686	200,000		21	0	20,115.409/MO	201,154				
10.00 MO															
6.712 Labor hours															
0.585 Equipment hours															

City of Angleton_WWTP Blower Building_Concept

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Angleton WTP

Design Stage:

Detail Report - Direct Costs

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	
			Amount	Amount	Amount		Amount	Amount	Amount	Unit Cost
001.10 GENERAL REQUIREMENTS			448	686	200,000		21	0	20,115.409/MO	201,154
10.00 MO										
6.712 Labor hours										
0.585 Equipment hours										
005.15 SITE / CIVIL / STORMWATER										
DIVISION 02			EXISTING CONDITIONS							
02 41 00.020			General Site Demolition, Asphalt Pavement							
02 41 00.020.110			General Site Demolition, Asphalt Pavement - 1,500 Sq. Ft.							
5050	Demolish, remove pavement & curb, remove bituminous pavement, 4" to 6" thick, excludes hauling and disposal fees - Union	167.00 SY	2,628	-	-		1,462	-	24.491 /SY	4,090
0100	Selective demolition, dump charges, typical urban city, building construction materials, includes tipping fees only	56.00 ton	-	4,144	-		-	-	74.00 /ton	4,144
0015	Selective demolition, saw cutting, asphalt, up to 3" deep - Open Shop	200.00 LF	213	20	-		233	-	2.332 /LF	466
0020	Selective demolition, saw cutting, each additional inch of depth over 3" - Open Shop	200.00 lf	124	6	-		136	-	1.332 /lf	266
n 0560	Hauling,excavated borrow material,loose cubic yards,20 mile round trip,0.4 load/hr,base wide rate,12 cy truck,highway haulers,excludes loading	28.00 CY	386	-	-		487	-	31.201 /CY	874
02 41 00.020.110 General Site Demolition, Asphalt Pavement - 1,500 Sq. Ft.			3,351	4,170			2,319		58.925/SY	9,840
167.00 SY										
50.348 Labor hours										
44.795 Equipment hours										
02 41 00.020 General Site Demolition, Asphalt Pavement			3,351	4,170	0		2,319	0		9,840
50.348 Labor hours										
44.795 Equipment hours										
02 41 06.000			Utility and Yard Pipe Demolition							
02 41 06.000.105			Utility and Yard Pipe Demolition							
1100	Selective demolition, water & sewer piping & fittings, ductile iron pipe, 6"-12", diameter, excludes excavation	40.00 LF	579	-	-		128	-	17.671 /LF	707
n 1136	Demo materials, haul off site w/ disposal fees	1.00 LOA D	269	400	-		187	-	855.59 /LOA D	856

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

5/13/2026 9:50 AM

Angleton WTP

Design Stage:

Detail Report - Direct Costs

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	
			Amount	Amount	Amount		Amount	Amount	Unit Cost	Amount
	02 41 06.000.105 Utility and Yard Pipe Demolition		848	400			314		39.060/LF	1,562
	40.00 LF									
	13.143 Labor hours									
	5.829 Equipment hours									
	02 41 06.000 Utility and Yard Pipe Demolition		848	400	0		314	0	39.060/LF	1,562
	40.00 LF									
	13.143 Labor hours									
	5.829 Equipment hours									
	DIVISION 02 EXISTING CONDITIONS		4,199	4,570	0		2,634	0	11,402.85 /LS	11,403
	1.00 LS									
	63.491 Labor hours									
	50.624 Equipment hours									
DIVISION 31			EARTHWORK							
31 22 00.000			Site Grading							
31 22 00.010			Site Grading - 1,500 Sq. Ft.							
0012	Fine grading, finish grading, small area, to be paved with grader - 20% adjustment for low qty	167.00 SY	548	-	-		631	-	7.060 /SY	1,179
	31 22 00.010 Site Grading - 1,500 Sq. Ft.		548				631		7.060/SY	1,179
	167.00 SY									
	8.017 Labor hours									
	4.009 Equipment hours									
	31 22 00.000 Site Grading		548	0	0		631	0	7.060/SY	1,179
	167.00 SY									
	8.017 Labor hours									
	4.009 Equipment hours									
	DIVISION 31 EARTHWORK		548	0	0		631	0	1,179.06 /LS	1,179
	1.00 LS									
	8.017 Labor hours									
	4.009 Equipment hours									
DIVISION 32			EXTERIOR IMPROVEMENTS							

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

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Design Stage:

Detail Report - Direct Costs

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
			Amount	Amount	Amount		Amount	Amount	Unit Cost	
<u>32 12 16.130</u>			<u>Plant-Mix Asphalt Paving</u>							
<u>32 12 16.130.110</u>			<u>Asphalt Pavement Replacement Allowance, 04" binder x 02" wearing course x 2,500 Sq. Ft.</u>							
0100	Aggregate for earthwork, bank run gravel, spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction	93.00 lcy	300	1,400	-		487	-	23.509 /lcy	2,186
0012	Fine grading, finish grading, small area, to be paved with grader	277.778 sy	760	-	-		874	-	5.882 /sy	1,634
5020	Compaction, riding, vibrating roller, 3 passes, 6" lifts	93.00 bcy	35	-	-		28	-	0.672 /bcy	62
0200	Plant-mix asphalt paving, for highways and large paved areas, binder course, 4" thick, no hauling included	277.778 SY	379	7,822	-		215	-	30.299 /SY	8,416
0380	Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included	277.778 sy	275	4,378	-		152	-	17.298 /sy	4,805
n 0560	Hauling, asphalt material, loose cubic yards, 20 mile round trip, 0.4 load/hr, base wide rate, 12 cy truck, highway haulers, excludes loading	71.00 lcy	979	-	-		1,236	-	31.201 /lcy	2,215
<u>32 12 16.130.110 Asphalt Pavement Replacement Allowance, 04" binder x 02" wearing course x 2,500 Sq. Ft.</u>			<u>2,728</u>	<u>13,600</u>			<u>2,991</u>		<u>69.55 /SY</u>	<u>19,319</u>
277.778 SY										
40.608 Labor hours										
27.174 Equipment hours										
<u>32 12 16.130 Plant-Mix Asphalt Paving</u>			<u>2,728</u>	<u>13,600</u>	<u>0</u>		<u>2,991</u>	<u>0</u>	<u>69.55 /SY</u>	<u>19,319</u>
277.778 SY										
40.608 Labor hours										
27.174 Equipment hours										
<u>32 16 13.013</u>			<u>Cast-In-Place Concrete Curbs and Gutters</u>							
<u>32 16 13.013.100</u>			<u>Curb & gutter, Steel forms, 24" Wide x 6" High x 200 Linear feet</u>							
2050	Expansion joint, premolded, bituminous fiber, 1" x 12"	200.00 lf	387	608	-		-	-	4.973 /lf	995
0441	Cast-in place concrete curbs & gutters, radius steel forms, 6" high curb, 6" thick gutter, 24" wide, radius, includes concrete	200.00 LF	1,347	2,510	-		-	-	19.286 /LF	3,857
<u>32 16 13.013.100 Curb & gutter, Steel forms, 24" Wide x 6" High x 200 Linear feet</u>			<u>1,734</u>	<u>3,118</u>					<u>24.259 /LF</u>	<u>4,852</u>
200.00 LF										
24.533 Labor hours										

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
Detail Report - Direct Costs

Item	Description	Takeoff Qty	Labor	Material	Subcontract		Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
	02 41 01.001.100 Relocate 3 Blowers - Flat bed trailer, 1 Truck Driver + 5 Man Crew x 3 Days each blower		127,860				387,291		57,238.956/DAY	515,151
	9.00 DAY									
	1,744.00 Labor hours									
	1,260.00 Equipment hours									
	02 41 01.001 Relocations		127,860	0	0		387,291	0	57,238.956/DAY	515,151
	9.00 DAY									
	1,744.00 Labor hours									
	1,260.00 Equipment hours									
	DIVISION 02 EXISTING CONDITIONS		127,860	0	0		387,291	0	515,150.60 /LS	515,151
	1.00 LS									
	1,744.00 Labor hours									
	1,260.00 Equipment hours									
DIVISION 03			CONCRETE							
03 12 00.000			Cast-In-Place Concrete, Pad Footings							
03 12 00.000.100			Footings for Silts, 4' x 4' x 18" Thick							
	3061 C. I. P. concrete forms, foundation, edge, wood, over 12", 4 use, includes erecting, bracing, stripping and cleaning	24.00 sfca	151	17	-		-	-	7.012 /sfca	168
n	2005 Reinforcing steel, unload and sort, add to base_FOUNDATIONS	0.45 ton	20	-	-		10	-	67.24 /ton	30
n	2211 Reinforcing steel, crane cost for handling, average, add_FOUNDATIONS	0.45 ton	22	-	-		11	-	73.09 /ton	33
n	0605 Reinforcing steel, in place, FOUNDATIONS, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	0.45 ton	504	419	-		-	-	2,049.089 /ton	922
n	4652 Structural concrete, placing, foundations, pumped, over 6" thick, includes vibrating, excludes material	4.00 cy	87	-	-		12	-	24.705 /cy	99
n	4652 Structural concrete, placing, foundations, pumped, over 6" thick, includes vibrating, excludes material	0.40 cy	9	-	-		1	-	24.70 /cy	10
n	0300 Struct FOUNDATION concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	4.00 CY	-	900	-		-	-	225.00 /CY	900

City of Angleton_WWTP Blower Building_Concept

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Angleton WTP

Design Stage:

Detail Report - Direct Costs

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	
			Amount	Amount	Amount		Amount	Amount	Unit Cost	Amount
<i>03 12 00.000.100 Footings for Silts, 4' x 4' x 18" Thick</i>										
n	0300 Struct FOUNDATION concrete,ready mix,normal wt,4000 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	0.40 cy	-	90	-		-	-	225.00 /cy	90
n	0105 Concrete finishing, floors, manual screed, bull float_FOUNDATIONS	16.00 sf	6	-	-		-	-	0.395 /sf	6
n	0105 Earthwork allowance	1.00 ls		-	5,000		-	-	5,000.00 /ls	5,000
<i>03 12 00.000.100 Footings for Silts, 4' x 4' x 18" Thick</i>			798	1,425	5,000		35		1,814.638/CY	7,259
4.00 CY										
10.599 Labor hours										
0.646 Equipment hours										
<i>03 12 00.000 Cast-In-Place Concrete, Pad Footings</i>			798	1,425	5,000		35	0	1,814.638/CY	7,259
4.00 CY										
10.599 Labor hours										
0.646 Equipment hours										
<i>03 23 30.030 CIP Square Column 30"</i>										
<i>03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total</i>										
	6650 C.I.P. concrete forms, column, square, plywood, 24" x 24", 4 use, includes erecting, bracing, stripping and cleaning	530.00 sfca	4,920	890	-		-	-	10.962 /sfca	5,810
n	0202 Ties, for coil tie system, for CIP column forms, 1/2", 6000#, 36", includes material only	4.00 c	-	1,900	-		-	-	475.00 /c	1,900
n	2030 Reinforcing steel, unload and sort, add to base_COLUMNS	5.556 ton	245	-	-		129	-	67.243 /ton	374
n	2216 Reinforcing steel, crane cost for handling, average, add_COLUMNS	5.556 ton	266	-	-		140	-	73.092 /ton	406
	0250 Reinforcing steel, in place, columns, #8 to #18, A615, grade 60, incl labor for accessories, excl material for accessories	5.556 ton	6,218	8,056	-		-	-	2,569.096 /ton	14,274
	0600 Structural concrete, placing, column, square or round, pumped, 18" thick, includes leveling (strike off) & consolidation, excludes material	22.222 cy	993	-	-		136	-	50.785 /cy	1,129
	0600 Structural concrete, placing, column, square or round, pumped, 18" thick, includes leveling (strike off) & consolidation, excludes material	2.222 cy	99	-	-		14	-	50.788 /cy	113
n	0625 Struct COLUMNS concrete,ready mix,normal wt,4500 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	22.222 CY	-	5,000	-		-	-	225.00 /CY	5,000
n	0625 Struct COLUMNS concrete,ready mix,normal wt,4500 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	2.222 cy	-	500	-		-	-	225.00 /cy	500

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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Angleton WTP

Design Stage:

Detail Report - Direct Costs

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract		Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
03 23 24.030.110	Stilts, CIP Square Column 30" x 24' Ht. x 4 Total									
n	0022 Concrete finishing, columns, includes breaking ties and patching voids	530.00 sf	544	16	-		-	-	1.057 /sf	560
	03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total		13,284	16,362			419		1,352.941/CY	30,065
	22.222 CY									
	180.286 Labor hours									
	7.446 Equipment hours									
	03 23 30.030 CIP Square Column 30"		13,284	16,362	0		419	0	1,352.941/CY	30,065
	22.222 CY									
	180.286 Labor hours									
	7.446 Equipment hours									
03 24 00.024	24" Elevated Slab									
03 24 00.024.000	24" Elevated Slab x 450 Sq. Ft.									
	6600 Scaffolding, steel tubular, heavy duty shoring for elevated slab forms, floor area, labor only to erect & dismantle, to 14'-8" high	5.00 csf	1,160	-	-		-	-	231.958 /csf	1,160
	6610 Scaffolding, steel tubular, heavy duty shoring for elevated slab forms, floor area, rent/month of materials only, to 14'-8" high	14.00 csf	-	1,134	-		-	-	81.00 /csf	1,134
	2150 C.I.P. concrete forms, elevated slab, flat slab with drop panels, to 15' high, 4 use, includes shoring, erecting, bracing, stripping and cleaning	450.00 sf	2,807	1,292	-		-	-	9.107 /sf	4,098
	7000 C.I.P. concrete forms, elevated slab, edge forms, to 6" high, 4 use, includes shoring, erecting, bracing, stripping and cleaning	90.00 lf	398	43	-		-	-	4.898 /lf	441
n	2040 Reinforcing steel, unload and sort, add to base_ELEVATE SLABS	3.713 ton	163	-	-		86	-	67.242 /ton	250
n	2218 Reinforcing steel, crane cost for handling, average, add_ELEVATED SLABS	3.713 ton	178	-	-		94	-	73.09 /ton	271
	0400 Reinforcing steel, in place, elevated slabs, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	3.713 ton	3,296	5,384	-		-	-	2,337.56 /ton	8,679
	1500 Structural concrete, placing, elevated slab, pumped, 6" to 10" thick, includes leveling (strike off) & consolidation, excludes material	3.30 cy	83	-	-		11	-	28.567 /cy	94
	1500 Structural concrete, placing, elevated slab, pumped, 6" to 10" thick, includes leveling (strike off) & consolidation, excludes material	33.00 cy	829	-	-		113	-	28.566 /cy	943
n	0825 Struct ELEV SLAB concrete,ready mix,normal wt,4500 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	3.30 cy	-	743	-		-	-	225.00 /cy	743

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report - Direct Costs

Item	Description	Takeoff Qty		Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
				Amount	Amount	Amount		Amount	Amount	Unit Cost	
03 24 00.024.00024" Elevated Slab x 450 Sq. Ft.											
n	0825	Struct ELEV SLAB concrete,ready mix,normal wt,4500 psi,includes local aggregate,sand,portland cement and water,delivered, includes all additives	33.00	CY	-	7,425	-	-	-	225.00 /CY	7,425
n	0256	Concrete finishing, floors, manual screed, bull float, machine float & steel trowel (walk-behind)_ELEV SLAB	450.00	sf	414	-	-	27	-	0.980 /sf	441
n	9000	Concrete finishing, elev slabs, includes patching voids	450.00	sf	462	14	-	-	-	1.057 /sf	476
					9,789	16,034		332		792.560/CY	26,154
33.00 CY											
134.256 Labor hours											
8.162 Equipment hours											
03 24 00.024 24" Elevated Slab					9,789	16,034	0	332	0	792.560/CY	26,154
33.00 CY											
134.256 Labor hours											
8.162 Equipment hours											
03 41 00.001Precast Concrete - Tees											
03 41 00.001.120Precast double tee roof x 450 Sq. Ft.											
	0350	Precast tees, double, floor, 50' span, prestressed	450.00	SF	385	5,603	-	189	-	13.727 /SF	6,177
03 41 00.001.120 Precast double tee roof x 450 Sq. Ft.					385	5,603		189		13.727/SF	6,177
450.00 SF											
5.063 Labor hours											
0.563 Equipment hours											
03 41 00.001 Precast Concrete - Tees					385	5,603	0	189	0	13.727/SF	6,177
450.00 SF											
5.063 Labor hours											
0.563 Equipment hours											
DIVISION 03 CONCRETE					24,257	39,424	5,000	975	0	1,176.168/CY	69,655
59.222 CY											
330.204 Labor hours											
16.816 Equipment hours											
DIVISION 04MASONRY											

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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Angleton WTP

Detail Report - Direct Costs

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	
			Amount	Amount	Amount		Amount	Amount	Amount	Unit Cost
04 22 01.012 Concrete Masonry Unit (12" CMU) - Exterior										
04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet										
0090	Scaffolding, steel tubular, regular, labor only to erect & dismantle, building exterior, wall face, 6'-4" x 5' frames, 1 to 5 stories, excludes planks	13.00 csf	2,827	-	-		-	-	217.461 /csf	2,827
0906	Scaffolding, steel tubular, regular, rent/month only for complete system for face of walls, 6' -4" x 5' frames, excludes planks	13.00 csf	-	1,521	-		-	-	117.00 /csf	1,521
2850	Scaffolding, steel tubular, regular, accessory, plank, rent/mo, 2" x 10" x 16' long	15.00 ea	-	210	-		-	-	14.00 /ea	210
0060	Grout, bond beams and lintels, 8" deep, 12" thick, 0.30 CF per LF, pumped, excludes blockwork	90.00 lf	181	211	-		19	-	4.564 /lf	411
0350	Grout, concrete masonry unit (CMU) cores, 12" thick, 0.422 CF/SF, pumped, excludes blockwork	1,260.00 sf	4,114	4,145	-		440	-	6.904 /sf	8,699
0020	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed horizontally, ASTM A615	297.396 lb	205	300	-		-	-	1.698 /lb	505
0060	Masonry reinforcing bars, #5 and #6 reinforcing steel bars, placed vertically, ASTM A615	1,561.329 lb	1,322	1,577	-		-	-	1.857 /lb	2,899
n 0150	Concrete block,bond beam,normal weight,2000 psi,12"x8"x16",includes mortar,excludes scaffolding,horizontal reinforcing,vertical reinforcing and grout	90.00 lf	544	698	-		-	-	13.796 /lf	1,242
n 0300	Cnrc blk,extr,toold jnts both sides,norml wt,2000 psi,12"8"16",incld mortr and hrznt joint rnfr every other cours,excld scffl,grout and vrtcl rnfrcn	1,260.00 SF	15,540	5,985	-		-	-	17.084 /SF	21,525
n 0300	Cnrc blk,extr,toold jnts both sides,norml wt,2000 psi,12"8"16",incld mortr and hrznt joint rnfr every other cours,excld scffl,grout and vrtcl rnfrcn	126.00 sf	1,554	599	-		-	-	17.084 /sf	2,153
04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet			26,288	15,245			459		33.327/SF	41,992
1,260.00 SF										
401.542 Labor hours										
16.442 Equipment hours										
04 22 01.012 Concrete Masonry Unit (12" CMU) - Exterior			26,288	15,245	0		459	0	33.327/SF	41,992
1,260.00 SF										
401.542 Labor hours										
16.442 Equipment hours										
DIVISION 04 MASONRY			26,288	15,245	0		459	0	33.327/SF	41,992
1,260.00 SF										
401.542 Labor hours										
16.442 Equipment hours										

AACE Classification Accuracy Range

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Lower Range -30%

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Angleton WTP

Design Stage:

Detail Report - Direct Costs

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty		Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
				Amount	Amount	Amount		Amount	Amount	Unit Cost	
DIVISION 05											
METALS											
05 51 00.020Metal Stairs - Aluminum											
05 51 00.020.100Aluminum Stairs, 4' Wide + Aluminum Landings											
0050	Stair, shop fabricated, steel, 4'-0" W, incl pipe railing, stringers, grating treads w/ safety nosing, per riser	40.00	RISR	3,291	20,600	-		232	-	603.086 /RIS R	24,123
0210	Railing, pipe, aluminum, clear finish, 3 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	200.00	LF	3,603	25,000	-		254	-	144.289 /LF	28,858
0132	Floor grating, aluminum, 1-1/2" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., up to 300 S.F., field fabricated from panels	60.00	sf	212	2,700	-		15	-	48.775 /sf	2,927
	05 51 00.020.100 Aluminum Stairs, 4' Wide + Aluminum Landings			7,106	48,300			502		1,397.692/RISR	55,908
	40.00 RISR										
	92.125 Labor hours										
	23.031 Equipment hours										
	05 51 00.020 Metal Stairs - Aluminum			7,106	48,300	0		502	0	1,397.692/RISR	55,908
	40.00 RISR										
	92.125 Labor hours										
	23.031 Equipment hours										
05 51 36.005Metal Walkways											
05 51 36.005.100Metal Walkways, 400 Sq. Ft.											
0148	Floor grating, aluminum, 2-1/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., over 300 S.F., field fabricated from panels	400.00	SF	987	28,400	-		70	-	73.643 /SF	29,457
0020	Grating frame, aluminum, 1" to 1-1/2" D, field fabricated	210.00	lf	7,334	2,957	-		-	-	49.005 /lf	10,291
	05 51 36.005.100 Metal Walkways, 400 Sq. Ft.			8,321	31,357			70		99.370/SF	39,748
	400.00 SF										
	108.812 Labor hours										
	3.20 Equipment hours										
	05 51 36.005 Metal Walkways			8,321	31,357	0		70	0	99.370/SF	39,748
	400.00 SF										
	108.812 Labor hours										
	3.20 Equipment hours										

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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Design Stage:

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor Amount	Material Amount	Subcontract Amount	Name	Equipment Amount	Other Amount	Total Unit Cost	Amount
<u>05 52 13.103 Aluminum Railings - 3 Rail</u>										
<u>05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.</u>										
0210	Railing, pipe, aluminum, clear finish, 3 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	210.00 LF	3,784	26,250	-		267	-	144.289 /LF	30,301
	05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.		3,784	26,250			267		144.289/LF	30,301
	210.00 LF									
	49.051 Labor hours									
	12.263 Equipment hours									
05 52 13.103 Aluminum Railings - 3 Rail			3,784	26,250	0		267	0	144.289/LF	30,301
	210.00 LF									
	49.051 Labor hours									
	12.263 Equipment hours									
DIVISION 05 METALS			19,211	105,907	0		838	0	125,956.47 /LS	125,956
	1.00 LS									
	249.988 Labor hours									
	38.494 Equipment hours									

DIVISION 07

THERMAL, MOISTURE PROTECTION

<u>07 54 19.010 PVC Membrane Roofing - Fully Adhered</u>										
<u>07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.</u>										
n	8890	Polyvinyl-chloride roofing, (PVC), heat welded seams, reinforced, 0.40 P.S.F., fully adhered with adhesive, 60 mils	4.50 SQ	613	857	-	59	-	339.807 /SQ	1,529
	0800	Aluminum coping, stock units, for 12" wall, excludes scaffolding	90.00 lf	1,156	208	-	-	-	15.158 /lf	1,364
	2780	2" x 8" miscellaneous wood blocking, to steel construction, per M.B.F.	0.195 mbf	538	210	-	-	-	3,836.40 /mbf	748
	2780	2" x 8" miscellaneous wood blocking, to steel construction, per M.B.F.	0.488 mbf	1,348	525	-	-	-	3,836.41 /mbf	1,872
	0200	Underlayment, plywood, underlayment grade, 5/8" thick	450.00 SF	559	1,898	-	-	-	5.460 /SF	2,457
	1725	Polyisocyanurate insulation, for roof decks, 2" thick, 2#/CF density, fastening excluded	450.00 sf	244	508	-	-	-	1.670 /sf	752
	1725	Polyisocyanurate insulation, for roof decks, 2" thick, 2#/CF density, fastening excluded	450.00 sf	244	508	-	-	-	1.670 /sf	752
	1745	Polyisocyanurate insulation, for roof decks, 3" thick, 2#/CF density, fastening excluded	450.00 sf	267	755	-	-	-	2.27 /sf	1,022

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report - Direct Costs

Item	Description	Takeoff Qty		Labor	Material	Subcontract		Equipment	Other	Total	
				Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
07 54 19.010.110PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.											
1745	Polyisocyanurate insulation, for roof decks, 3" thick, 2#/CF density, fastening excluded	450.00 sf		267	755	-		-	-	2.27 /sf	1,022
0100	Sheet metal flashing, aluminum, flexible, mill finish, .032" thick, including up to 4 bends	450.00 sf		1,599	1,908	-		-	-	7.792 /sf	3,507
07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.				6,834	8,129			59		3,338.49 /SQ	15,023
4.50 SQ											
102.814	Labor hours										
2.077	Equipment hours										
07 54 19.010 PVC Membrane Roofing - Fully Adhered				6,834	8,129	0		59	0	33.385/SF	15,023
450.00 SF											
102.814	Labor hours										
2.077	Equipment hours										
DIVISION 07 THERMAL, MOISTURE PROTECTION				6,834	8,129	0		59	0	33.385/SF	15,023
450.00 SF											
102.814	Labor hours										
2.077	Equipment hours										
DIVISION 08 OPENINGS											
08 11 16.030Aluminum Doors & Frames (3070)											
08 11 16.030.110Aluminum Doors & Frames - 3' x 7' x 1 Total											
1000	Frames, steel, knock down, hollow metal, single, 16 ga., up to 4-7/8" deep, 3'-0" x 7'-0"	1.00 EA		72	195	-		-	-	267.49 /EA	267
5050	Doors, aluminum, commercial entrance, flush panel doors, single, 3'-0" x 7'-0", incl. hinges, push/pull, deadlock, cylinder, threshold, excl. glazing	1.00 ea		489	860	-		-	-	1,348.87 /ea	1,349
3000	Door hardware, panic device, narrow stile, mortise bar, exit only	1.00 ea		145	600	-		-	-	744.97 /ea	745
0011	Thresholds, aluminum, 3' long door saddles	3.00 lf		36	36	-		-	-	24.13 /lf	72
1430	Door hardware, hinges, full mortise, high frequency, brass base, US10, 4-1/2" x 4-1/2"	1.50 pr		-	91	-		-	-	60.50 /pr	91
1200	Paints & coatings, exterior, door & frame, one side, flush, 1 coat, 3' x 7'	1.00 ea		30	2	-		-	-	31.95 /ea	32
08 11 16.030.110 Aluminum Doors & Frames - 3' x 7' x 1 Total				772	1,784					2,556.42 /EA	2,556
1.00 EA											

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report - Direct Costs

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	
			Amount	Amount	Amount		Amount	Amount	Unit Cost	Amount
08 11 16.030.110 Aluminum Doors & Frames - 3' x 7' x 1										
Total			772	1,784					2,556.42 /EA	2,556
1.00 EA										
10.371 Labor hours										
08 11 16.030 Aluminum Doors & Frames (3070)			772	1,784	0		0	0	2,556.42 /EA	2,556
1.00 EA										
10.371 Labor hours										
08 33 23.005 Aluminum Rolling Overhead Doors										
08 33 23.005.110 Aluminum Rolling Overhead Doors - 14' x 14' x 1 Total										
0500	Doors, rolling service, steel, manual, 20 gauge, 14' x 14' high, incl. hardware	1.00 ea	1,528	3,225	-		-	-	4,752.72 /ea	4,753
3300	Doors, rolling service, steel, manual, for enamel finish, add	168.00 sf	-	370	-		-	-	2.20 /sf	370
3700	Doors, rolling service, steel, manual, for safety edge bottom bar, electric, add	14.00 lf	-	630	-		-	-	45.00 /lf	630
4000	Doors, rolling service, steel, manual, for weatherstripping, extruded rubber, jambs, add	38.00 lf	-	597	-		-	-	15.70 /lf	597
4500	Doors, rolling service, steel, manual, motor operators for, to 14' x 12' opening	1.00 EA	244	1,200	-		-	-	1,444.44 /EA	1,444
4700	Doors, rolling service, steel, manual, for fire door, additional fusible link, add	9.00 ea	-	279	-		-	-	31.00 /ea	279
08 33 23.005.110 Aluminum Rolling Overhead Doors - 14' x 14' x 1 Total			1,772	6,300					8,072.36 /EA	8,072
1.00 EA										
23.20 Labor hours										
08 33 23.005 Aluminum Rolling Overhead Doors			1,772	6,300	0		0	0	8,072.36 /EA	8,072
1.00 EA										
23.20 Labor hours										
DIVISION 08 OPENINGS			2,544	8,084	0		0	0	5,314.39 /EA	10,629
2.00 EA										
33.571 Labor hours										

DIVISION 23 HEATING, VENTILATING & AIR-CONDITIONING (HVAC)*

23 00 00.000 HVAC \$ PER SF

23.00.00.011 HVAC Allowance

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report - Direct Costs

Item	Description	Takeoff Qty		Labor	Material	Subcontract	Name	Equipment	Other	Total	
				Amount	Amount	Amount		Amount	Amount	Unit Cost	Amount
23.00.00.011	HVAC Allowance										
n	0600 HVAC Allowance - Process Area Ventillation	450.00	SF			18,000			-	40.00 /SF	18,000
	23.00.00.011 HVAC Allowance					18,000					18,000
	23 00 00.000 HVAC \$ PER SF			0	0	18,000		0	0	40.00 /SF	18,000
	450.00 SF										
	DIVISION 23 HEATING, VENTILATING & AIR-CONDITIONING (HVAC)*			0	0	18,000		0	0	40.00 /SF	18,000
	450.00 SF										

DIVISION 40 PROCESS INTEGRATION (EXPOSED PIPE, VALVES AND GATES)

40 05 23.112	Pipe - Stainless Steel, 12" Dia										
40 05 23.112.100	Stainless Steel, Welded 316, 12" Dia.										
n	7001 Pipeline Testing, Hydro (LF)	85.00	lf	268	6	-		21	-	3.482 /lf	296
	1200 Piping system identification labels, pipe markers, indicate contents and flow direction, self adhesive, over 10" pipe size	10.00	ea	131	43	-		-	-	17.439 /ea	174
	8480 Pipe, stainless steel, welded, 12" pipe size, schedule 40, type 316, includes weld joint and clevis type hangers 10' OC	85.00	LF	7,847	34,000	-		536	-	498.627 /LF	42,383
	9210 Pipe, stainless steel, schedules 40 and 80, pipe, labor only, 12" pipe size, threading one end	4.25	ea	412	-	-		-	-	96.828 /ea	412
	9660 Pipe, stainless steel, schedule 40, welding labor, per joint, 12" pipe size, making the weld, includes the weld machine	4.25	ea	3,330	-	-		353	-	866.494 /ea	3,683
	40 05 23.112.100 Stainless Steel, Welded 316, 12" Dia.			11,988	34,050			910		552.327/LF	46,948
	85.00 LF										
	157.265 Labor hours										
	57.728 Equipment hours										
40 05 23.112.110	Connect 12" Header to Existing										
	6656 Connect 12" Header to Existing	1.00	EA	308	640	-		32	-	979.26 /EA	979
	40 05 23.112.110 Connect 12" Header to Existing			308	640			32		979.26 /EA	979
	1.00 EA										
	4.00 Labor hours										
	2.00 Equipment hours										

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report - Direct Costs

Item	Description	Takeoff Qty	Labor		Material		Subcontract		Equipment		Other		Total	
			Amount		Amount		Amount	Name	Amount		Amount		Unit Cost	Amount
	40 05 23.112 Pipe - Stainless Steel, 12" Dia				12,296	34,690	0		941	0		563.847/LF	47,927	
	85.00 LF													
	161.265 Labor hours													
	59.728 Equipment hours													
40 05 23.212	Fittings - Stainless Steel, 12" Dia													
40 05 23.212.100	Fittings - Stainless Steel, 12" Dia													
n	0720 Gasket and bolt set, for flanges, 150 lb., 12" pipe size	4.00 EA			624	364	-		-	-		247.065 /EA	988	
	6656 Flange, stainless steel, welded, weld neck, 150 lb., 12" diam., type 304, includes making the weld and weld machine	2.00 EA			1,620	1,280	-		111	-		1,505.145 /EA	3,010	
	3400 Elbow, 90 Deg., stainless steel, long, butt weld, 12", schedule 40, type 304, includes the weld machine	2.00 EA			3,239	3,300	-		221	-		3,380.295 /EA	6,761	
	40 05 23.212.100 Fittings - Stainless Steel, 12" Dia				5,483	4,944			332			1,344.893/EA	10,759	
	8.00 EA													
	70.777 Labor hours													
	21.053 Equipment hours													
	40 05 23.212 Fittings - Stainless Steel, 12" Dia				5,483	4,944	0		332	0		1,344.893/EA	10,759	
	8.00 EA													
	70.777 Labor hours													
	21.053 Equipment hours													
	DIVISION 40 PROCESS INTEGRATION (EXPOSED PIPE, VALVES AND GATES)				17,779	39,634	0		1,273	0		690.425/LF	58,686	
	85.00 LF													
	232.042 Labor hours													
	80.781 Equipment hours													

DIVISION 41 MATERIAL PROCESSING & HANDLING EQUIPMENT

41 22 13.130 Bridge Cranes

41 22 13.130.100 Bridge Cranes														
0325	Overhead bridge crane, under hung hoist, electric operating, 1 girder, 15 ton, 30' span	1.00 EA	3,566		75,000		-		216		-		78,781.23 /EA	78,781

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report - Direct Costs

Design Stage:

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Name	Equipment	Other	Total	Amount
			Amount	Amount	Amount		Amount	Amount	Unit Cost	
41 22 13.130.100	Bridge Cranes		3,566	75,000			216		78,781.23 /EA	78,781
	1.00 EA									
	42.50 Labor hours									
	2.50 Equipment hours									
41 22 13.130	Bridge Cranes		3,566	75,000	0		216	0	78,781.23 /EA	78,781
	1.00 EA									
	42.50 Labor hours									
	2.50 Equipment hours									
DIVISION 41 MATERIAL PROCESSING & HANDLING EQUIPMENT			3,566	75,000	0		216	0	78,781.23 /EA	78,781
	1.00 EA									
	42.50 Labor hours									
	2.50 Equipment hours									
160.18	BLOWER BUILDING		228,339	291,424	23,000		391,111	0	2,075.275/SF	933,874
	450.00 SF									
	3,136.662 Labor hours									
	1,417.111 Equipment hours									

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

Detail Report - Direct Costs

Estimate Totals

Description	Amount	Totals	Rate
Labor	237,996	3,280.023 †	
Material	313,397		
Equipment	397,387	1,499.504 †	
Subcontract	228,000		
Other			
Subtotal Direct Cost	1,176,780	1,176,780	
DIVISION 02	131,638		25.000 %
DIVISION 04	10,498		25.000 %
DIVISION 05	31,489		25.000 %
DIVISION 07	3,756		25.000 %
DIVISION 08	2,657		25.000 %
DIVISION 23	4,500		25.000 %
DIVISION 31	118		10.000 %
DIVISION 32	2,917		10.000 %
DIVISION 41	19,695		25.000 %
Subtotal W/Subcontractor Costs	207,268	1,384,048	
Contractor's Mob	83,043		6.000 %
Contractor's Home Office Overhead	83,043		6.000 %
Contractor's General Conditions	276,810		20.000 %
Subtotal Costs	442,896	1,826,944	
Sales Tax Estimate (Mat & Eq)	58,640		8.250 %
Subtotal Costs W/Tax	58,640	1,885,584	
Contractor's Fee	282,838		15.000 %
Subtotal Costs	282,838	2,168,422	
Design Development Contingency	650,527		30.000 %
Subtotal Costs	650,527	2,818,949	
Escalation Project (Year)	189,715		6.730 %
Subtotal Costs	189,715	3,008,664	
Market Volatility Adjustment Factor	451,300		15.000 %
Subtotal Costs	451,300	3,459,964	
Electrical	415,196		12.000 %
Instrumentation and Controls	207,598		6.000 %
Subtotal Factored Costs	622,794	4,082,758	
Contractor's Bonds & Insurance	102,069		2.500 %
Construction Total	102,069	4,184,827	

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

Project Name: City of Angleton_WWTP Blower Building Expansion_Concept
 Facility: Angleton WTP
 Design Stage: Concept - Class 4
 Date: 5/13/2026

Prepared By: Jasmine Hernandez



Escalation Adjustment - Calculation Worksheet

Escalation Rate per Year

5.00% = Annual Escalation Rate to Apply (2)

ESCALATION ADJUSTMENT:

Target NTP for Design:	13-May-26	<= If design is in progress or completed, use Today's date and adjust input cells as needed	
Design Period:	9-Nov-26	6	Mo Duration (or remaining design time duration)
Bid and Award:	8-Apr-27	5	Mo Duration
NTP Date:	15-Apr-27	7	Da Duration for NTP (7 days as default)
Construction Duration (calendar days):	300 Days	10	Mo Duration
Completion Date:	9-Feb-28		106.73% Factor
Mid-Point Construction:	12-Sep-27		
Current Est Date:	13-May-26		
No. of Days to Mid-Point:	487		
No. of Years to Mid-Point:	1.3342		

6.73% Esc Rate

Escalation to Apply to Opinion of Cost

NOTES:

1. Green cells are input cells. Yellow cells are default values. 30 calendar days is used to equate to 1 month.
2. Escalation percentage does not include any other Market Adjustment Factors that might apply.

The Escalation Rate and Calculations are for purposes of allowing for perceived increases in labor, material and equipment for the period indicated. This is only a projection and an approximation, and does not represent what the actual adjustment will ultimately be since that will vary from what is calculated above.