



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

DRAFT

City of Angleton

Di
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1 Executive Summary

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.

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. Other options that we 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	\$4,185,000	Includes new elevated building, electrical, and relocation of existing blowers,
TOTAL OPCC	\$5,109,000	

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 most complicated component of this project, the new Blower Building.

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 the air flow because the required pressure is different between the two sections.

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 equally sized aeration basins at the WWTP; each with the following dimensions: 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 that were assumed during the estimation of aeration basin air requirements based on provided influent data spanning from April 2018 to 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 for aeration basins for activated sludge plants. It contains several formulae that require details such as basin size, diffuser submerged depth, as well as characteristics that are specific to the proven laboratory data

associated with the specific diffuser to be used.

The required air flow to the aeration basins is extremely dependent on the type of diffuser, as well as their manufacturer and model. The variety of diffusers have a wide range of efficiencies in which they transfer air to the wastewater. To provide an estimate of required air flow that is more aligned with the anticipated diffuser design, we contacted Sanitaire, which is one of the most common diffuser manufacturers used in the wastewater market. 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 digesters 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. Additionally, 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 covers both the mixing and digestion functions. 30 TAC §217.249 part (t)(7)(G) states that an aerobic digester must have minimum of 20 scfm per 1,000 cubic feet of digester volume. With a volume of 65,000 cubic feet, this results in an air demand of 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 of which 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.

There are not currently any 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 through the use of 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 was generated from the blower curves that were obtained from 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 system fed by the Blower Building has 3 blowers with two blowers at 1,850 scfm and the other at 1,700 scfm at 10 psi. This would allow 2 blowers to function with one as a backup.

The digester system has a blower with 1,700 scfm to meet the air demand of 1,676 scfm at 7 psi. If that blower were to fail, the interconnection between the two air systems could be opened to provide air to the digester system. It is recommended that a pressure sustaining valve be installed to alleviate any imbalance between the two systems due to a difference in pressure (10 psi versus

7 psi).

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 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. These diffusers spread outward from a series of drop pipes. These diffusers 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. These 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 not only get a preliminary price quote, but to get their initial advice on the number of diffusers needed, and 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.

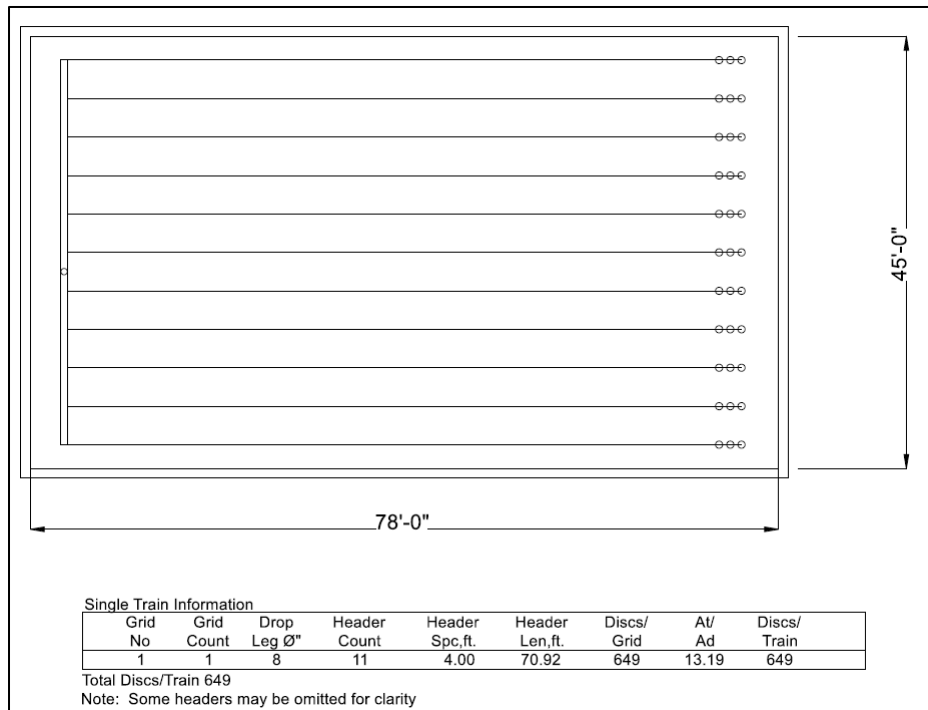


Figure 1 Grid Layout of Recommended Diffusers

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

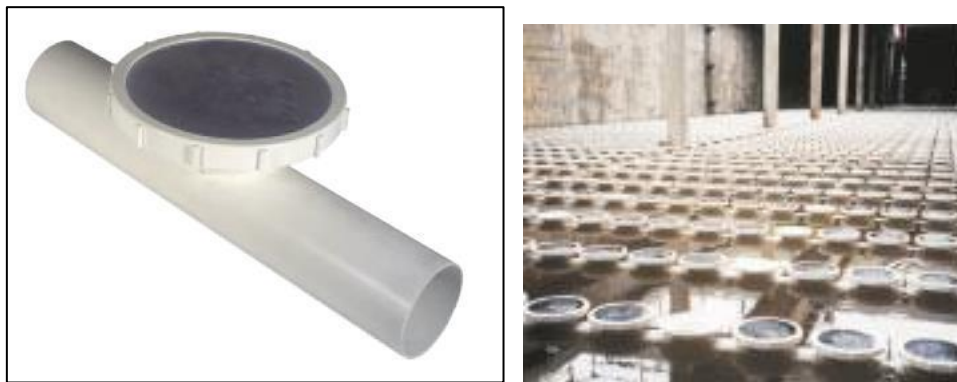


Figure 2 Sanitaire Diffuser and Grid Layout

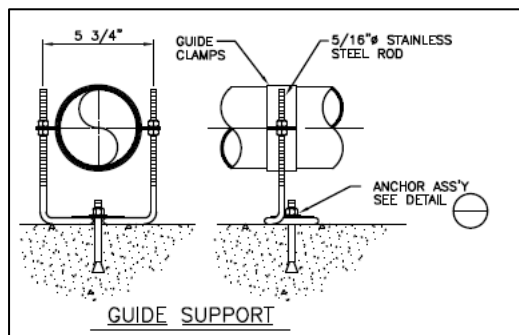


Figure 3 Connection Detail of Diffuser Grid Pipe

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 1970, when many cities across the country installed wastewater treatment plants with the creation of the Environmental Protection Agency. Using this assumption, the building is approximately 56 years old.

The 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

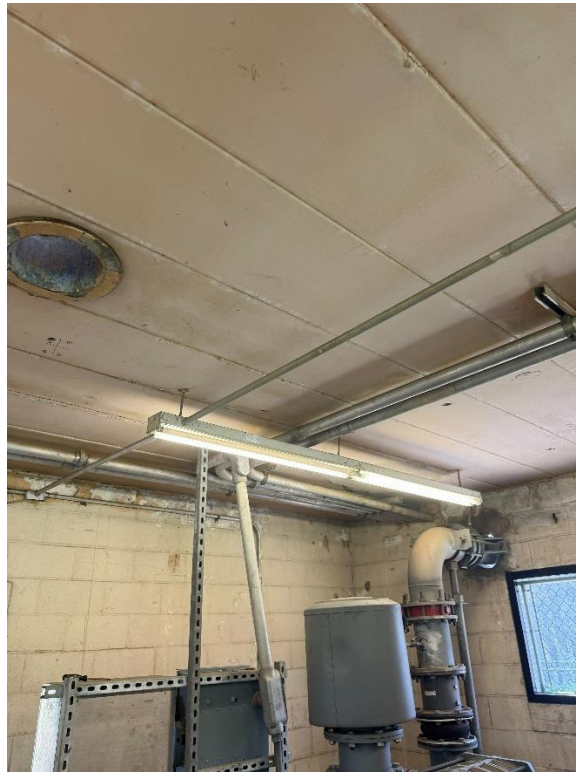


Figure 5 View of Blower Building ceiling and walls

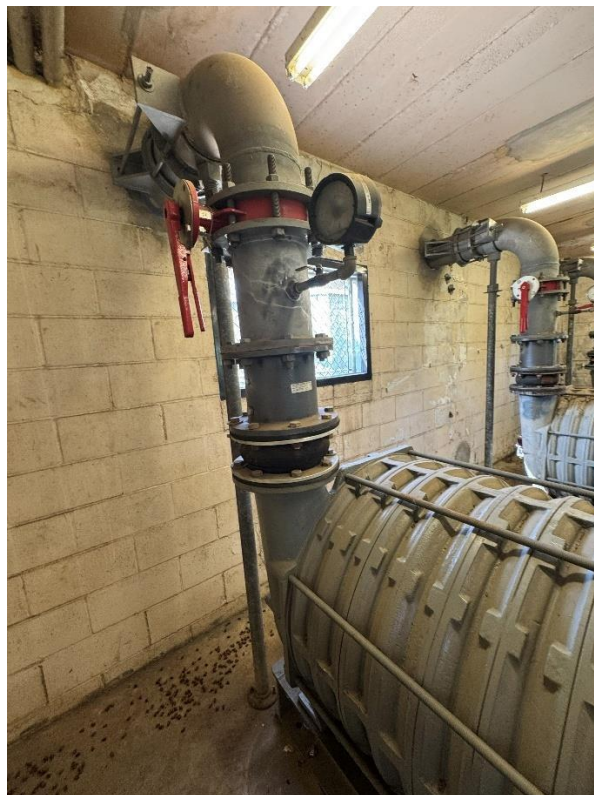


Figure 6 View of Blower and south wall of Blower Building

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 could very likely 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 would be 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 to 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.

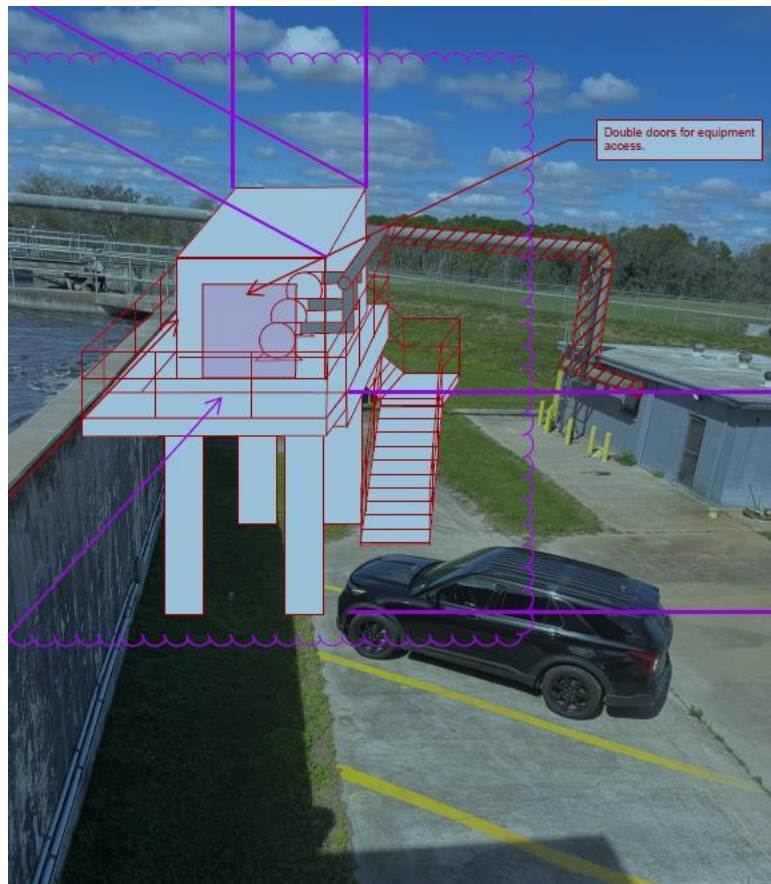


Figure 7 Potential layout of new Blower Building

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 to expand 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 also for hosing down areas.

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 <ul style="list-style-type: none"> • Preliminary estimate of Sanitaire equipment \$200,000. • Draining one tank and cleaning of 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 OPCC 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 that were developed, HDR used experienced cost estimating professionals to develop a Class 4 cost estimate for the new Blower Building. 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.

Factored Costs

The following Factored Costs were used on this project:

- o Electrical 12%
- o Instrumentation and Controls 6%

Table 12 Breakdown of Blower Building OPCC

Description	Amount	Totals	Rate
Labor	237,996	3,280,023	I
Material	313,397		
Equipment	397,387	1,499,504	I
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	

The opinion of probable cost for the blower building is \$4,185,000. 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.

7.4 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 13 Estimated OPCC for Angleton WWTP Projects

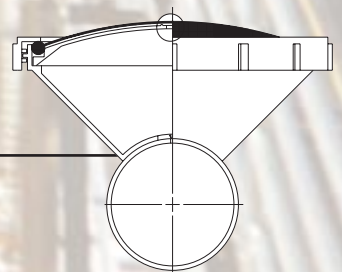
Component	OPCC
Air Diffusers and Air Header	\$869,000
Reuse System	\$55,000
Blower Building and Relocation	\$4,185,000
TOTAL	\$5,109,000

Appendix A

Information on Sanitaire Air Diffusers

Membrane Disc

Fine Bubble Aeration Systems



Sanitaire



ITT Industries
Engineered for life



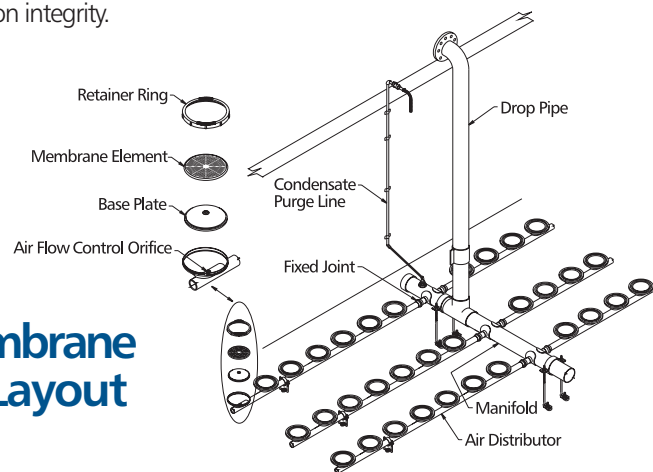
Technology You Can Count On

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

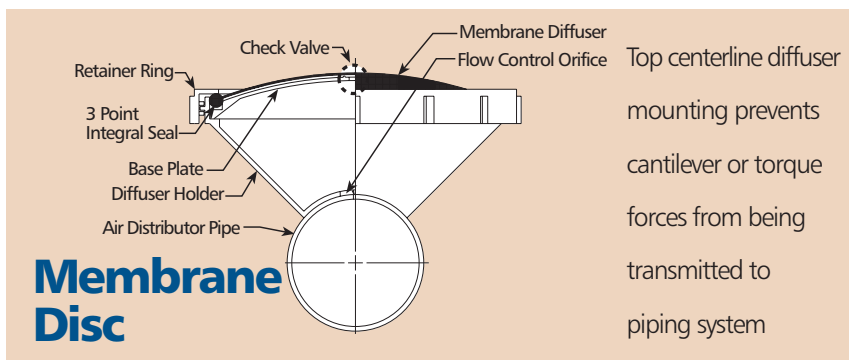
Sanitaire's leadership and experience in aeration technology has resulted in high quality SANITAIRE fine bubble disc aeration systems being specified more than any other aeration system. The membrane disc fine bubble diffusion system offers advantages in performance, engineering, quality and construction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



Typical Membrane Disc Grid Layout

Membrane Disc

Fine Bubble Aeration Systems

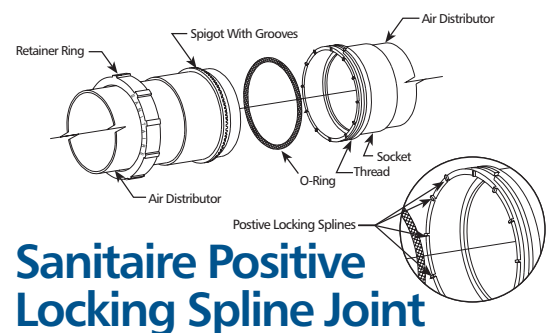
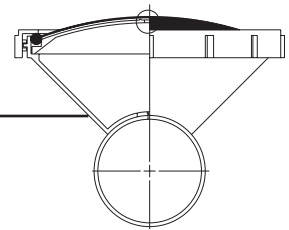


Diffuser and Holder Features

- 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



**Sanitaire Positive
Locking Spline Joint**



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

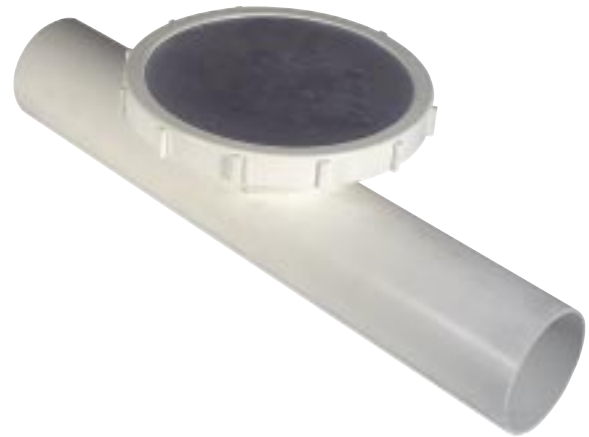
Applications

- 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.



Sanitaire
9333 N. 49th Street
Brown Deer, WI 53223 USA
Tel 414 365 2200
Fax 414 365 2210
www.sanitaire.com

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	ft ³	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

Parameter	Units	Zone 1	Totals/Overall
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

Parameter	Units	Zone 1	Totals/Overall
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

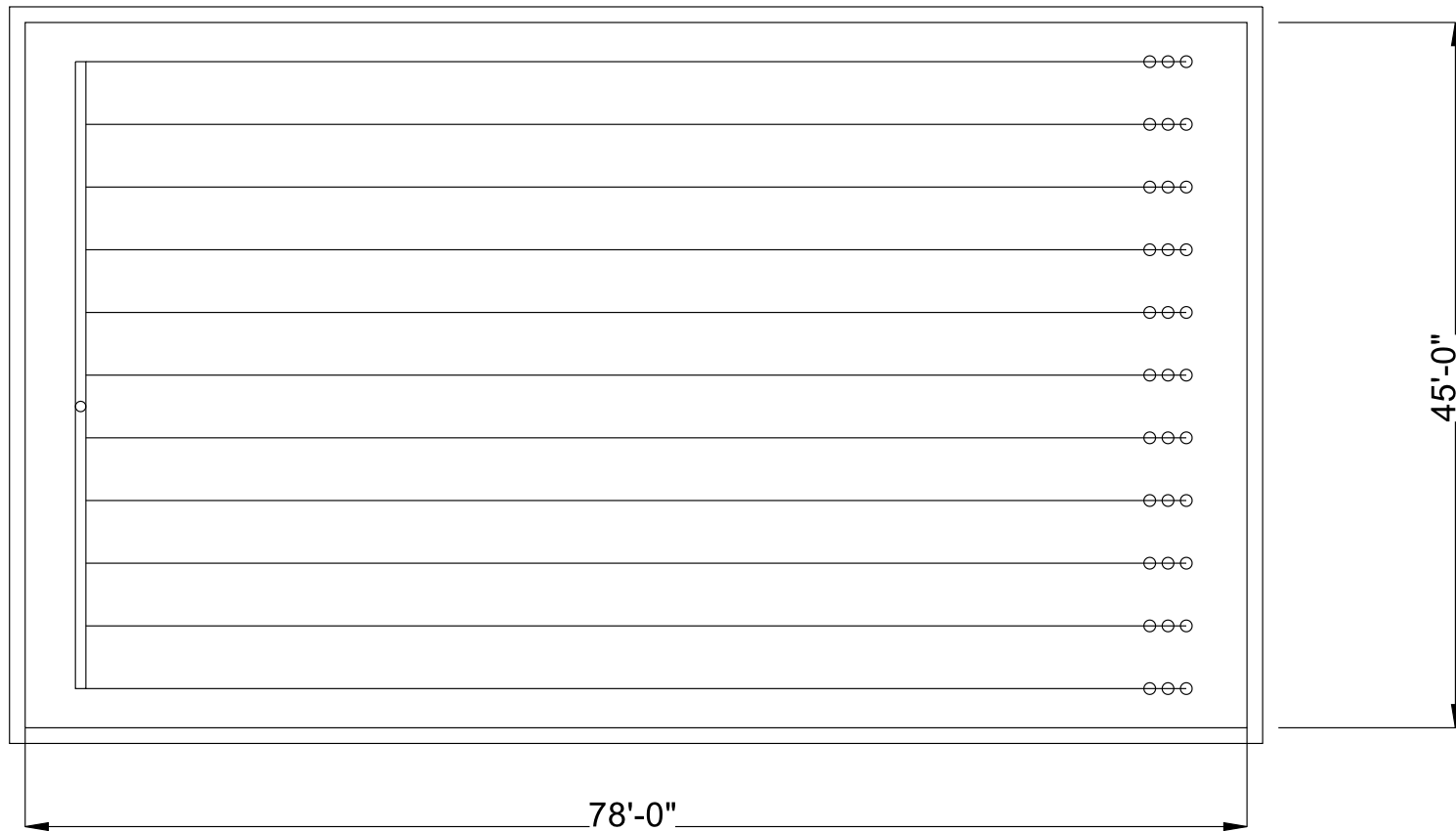
Diffuser Type		SSLP	
Alpha		0.6	
Beta		0.98	
Theta		1.024	
D.O.	mg/l	2	
Water Temp	°C	20	
AOR/SOR		0.4826	0.4826
Oxygen Distribution	%/Zone	100.0%	100.0%
AOR	lb/day	15,036.0	15,036.0
SOR	lb/day	31,159.2	31,159.2
Air Rate (7)	scfm		

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
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 - 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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BROWN DEER, WISCONSIN 53223

CUST NO.

DWG NO.

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Oyster Creek WWTP
9" Disc Aeration System

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DATE

5/7/26

DATE

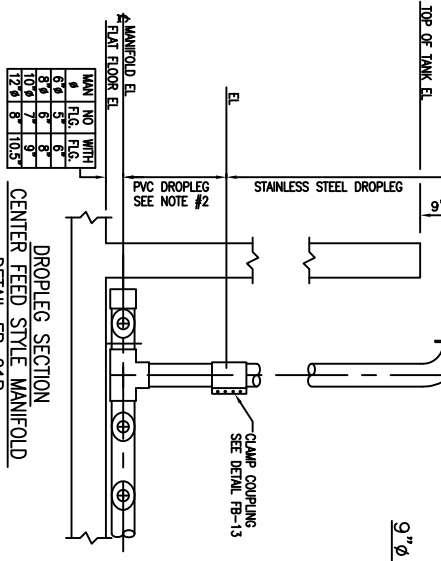
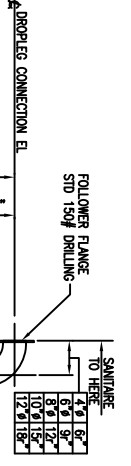
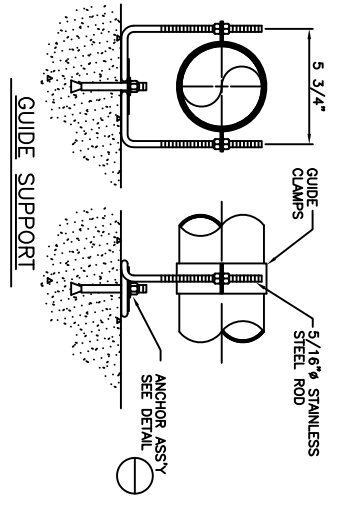
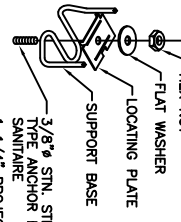
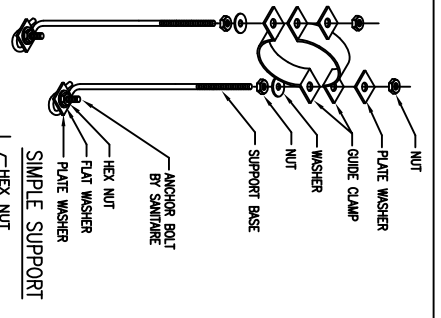
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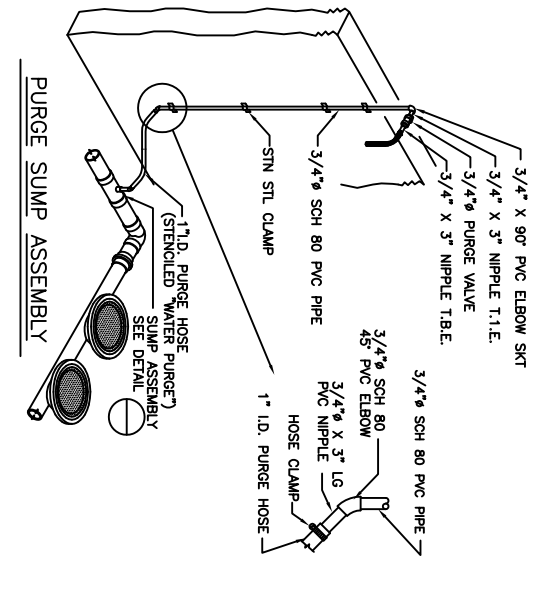
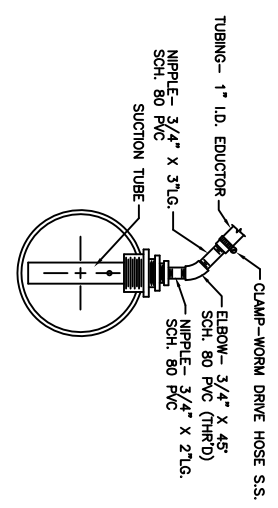
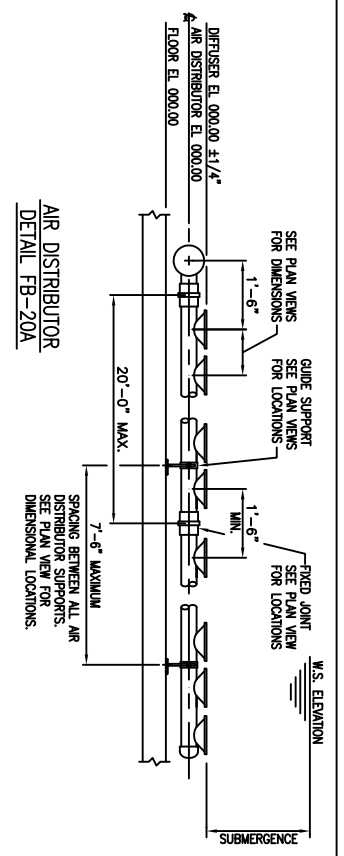
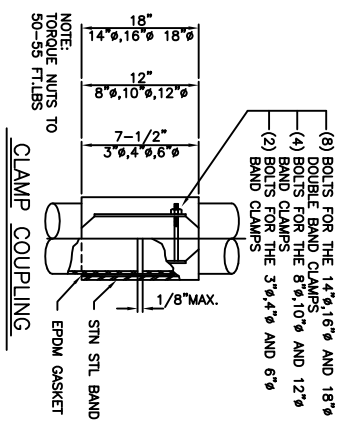
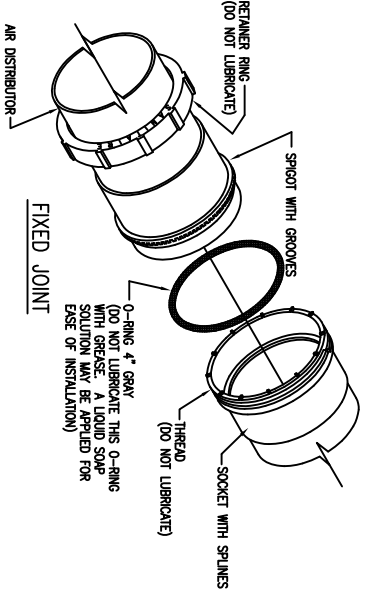
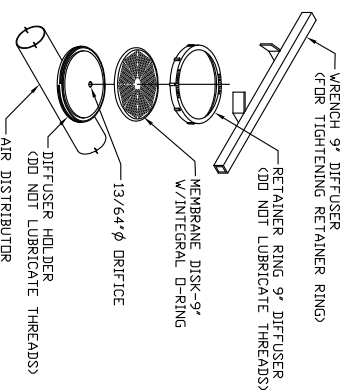
JOB

s33406-26

SHEET



MANIF. NO. 1	WHIT 1
6"	5"
8"	7"
10"	9"
12"	10.5"



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 Silts, 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

5/13/2026 9:36 AM

Angleton WTP

Design Stage:

Roll Up Report

Estimate Version: R01/May-13-2026

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

Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
 Roll Up Report

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	

Upper Range +50%

AACE Classification Accuracy Range

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

City of Angleton_WWTP Blower Building_Concept

5/13/2026 9:36 AM

Angleton WTP

Summary Report

Design Stage:

Estimate Version: R01/May-13-2026

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

Estimate Totals

Description	Amount	Totals	Rate
Labor	453,541	3,280.023	!
Material	589,761		
Equipment	775,164	1,499.504	!
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Other			
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Subtotal Costs	2,211,852		
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Subtotal Costs	189,715	3,110,734	
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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	

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									

City of Angleton_WWTP Blower Building_Concept
Angleton WTP
 Work Activity Report

Description	Quantity						Total		
		Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount	Unit Cost	Amount	
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

City of Angleton_WWTP Blower Building_Concept

5/13/2026 9:42 AM

Angleton WTP

Design Stage:

Work Activity Report

Estimate Version: R01/May-13-2026

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	3,982.636/SF	1,792,187
450.00 SF										
3,136.662 Labor hours										
1,417.111 Equipment hours										

Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

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	0		
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



Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

5/13/2026 9:50 AM

Angleton WTP

Design Stage:

Detail Report with Contractor Markups

Estimate Version: R01/May-13-2026

Item	Description	Takeoff Qty	Amount			Name	Amount		Unit Cost	Amount
			Labor	Material	Subcontract		Equipment	Other		
001.10 GENERAL REQUIREMENTS										
DIVISION 01 GENERAL REQUIREMENTS										
<i>01 55 00.000 Staging</i>										
<i>01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.</i>										
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
	<i>01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.</i>		763	1,168			35		43.687/SY	1,966
	45.00 SY									
	6.712 Labor hours									
	0.585 Equipment hours									
	<i>01 55 00.000 Staging</i>		763	1,168	0		35	0	196.593/MO	1,966
	10.00 MO									
	6.712 Labor hours									
	0.585 Equipment hours									
<i>01 88 03.000 Construction Phasing Costs</i>										
<i>01 88 03.000.100 Construction Phasing Costs</i>										
1910	Construction Phasing Costs	1.00 LS		0	340,689				340,689.36 /LS	340,689
	<i>01 88 03.000.100 Construction Phasing Costs</i>				340,689				340,689.36 /LS	340,689
	1.00 LS									
	<i>01 88 03.000 Construction Phasing Costs</i>		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									

Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

5/13/2026 9:50 AM

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
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.

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
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	754	-	-		952	-	60.949 /CY	1,707
	<i>02 41 00.020.110 General Site Demolition, Asphalt Pavement - 1,500 Sq. Ft.</i>		6,546	8,146			4,531		115.106/SY	19,223
	167.00 SY									
	50.348 Labor hours									
	44.795 Equipment hours									
	<i>02 41 00.020 General Site Demolition, Asphalt Pavement</i>		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

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
n 1136	Demo materials, haul off site w/ disposal fees	1.00 LOA D	525	781	-		365	-	1,671.34 /LOA D	1,671

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
	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									
<hr/>										
	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									
<hr/>										
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

<i>31 22 00.000 Site Grading</i>										
<i>31 22 00.010 Site Grading - 1,500 Sq. Ft.</i>										
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
	<i>31 22 00.010 Site Grading - 1,500 Sq. Ft.</i>		989				1,137		12.733/SY	2,126
	167.00 SY									
	8.017 Labor hours									
	4.009 Equipment hours									
<hr/>										
	<i>31 22 00.000 Site Grading</i>		989	0	0		1,137	0	12.733/SY	2,126
	167.00 SY									
	8.017 Labor hours									
	4.009 Equipment hours									
<hr/>										
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%

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Detail Report with Contractor Markups

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost
<u>32 12 16.130 Plant-Mix Asphalt Paving</u>									
<u>32 12 16.130.110 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	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								
<u>32 12 16.130 Plant-Mix Asphalt Paving</u>			4,920	24,526	0	5,395	0	125.430/SY	34,842
	277.778 SY								
	40.608 Labor hours								
	27.174 Equipment hours								
<u>32 16 13.013 Cast-In-Place Concrete Curbs and Gutters</u>									
<u>32 16 13.013.100 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	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%

City of Angleton_WWTP Blower Building_Concept

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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
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	1.00 LS			9,017				9,017.25 /LS	9,017
n	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

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Lower Range -30%

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Item	Description	Takeoff Qty	Labor	Material	Subcontract	Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost
	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%

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Item	Description	Takeoff Qty	Labor	Material	Subcontract	Equipment	Other	Total		
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
<i>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	-	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
<i>03 12 00.000.100 Footings for Silts, 4' x 4' x 18" Thick</i>			1,360	2,428	8,517	-	59	-	8,517.25 /ls	12,365
4.00 CY										
10.599 Labor hours										
0.646 Equipment hours										
<i>03 12 00.000 Cast-In-Place Concrete, Pad Footings</i>			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										
<i>CIP Square Column 30"</i>										
<i>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	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%

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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	Name	Amount	Amount	Unit Cost
<i>03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total</i>									
n	0022 Concrete finishing, columns, includes breaking ties and patching voids	530.00 sf	927	27	-	-	-	1.800 /sf	954
	<i>03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total</i>		22,628	27,872		713		2,304,662/CY	51,214
	22.222 CY								
	180.286 Labor hours								
	7.446 Equipment hours								
<i>03 23 30.030 CIP Square Column 30"</i>			22,628	27,872	0	713	0	2,304,662/CY	51,214
	22.222 CY								
	180.286 Labor hours								
	7.446 Equipment hours								
<i>03 24 00.024 24" Elevated Slab</i>									
<i>03 24 00.024.000 24" Elevated Slab x 450 Sq. Ft.</i>									
	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

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	Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost
<i>03 24 00.024.000 24" Elevated Slab x 450 Sq. Ft.</i>									
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
	<i>03 24 00.024.000 24" Elevated Slab x 450 Sq. Ft.</i>		16,675	27,312		565		1,350.085/CY	44,553
	33.00 CY								
	134.256 Labor hours								
	8.162 Equipment hours								
	<i>03 24 00.024 24" Elevated Slab</i>		16,675	27,312	0	565	0	1,350.085/CY	44,553
	33.00 CY								
	134.256 Labor hours								
	8.162 Equipment hours								
<i>03 41 00.001 Precast Concrete - Tees</i>									
<i>03 41 00.001.120 Precast double tee roof x 450 Sq. Ft.</i>									
	0350 Precast tees, double, floor, 50' span, prestressed	450.00 SF	657	9,544	-	322	-	23.383 /SF	10,522
	<i>03 41 00.001.120 Precast double tee roof x 450 Sq. Ft.</i>		657	9,544		322		23.383/SF	10,522
	450.00 SF								
	5.063 Labor hours								
	0.563 Equipment hours								
	<i>03 41 00.001 Precast Concrete - Tees</i>		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 04

MASONRY

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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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
<i>04 22 01.012 Concrete Masonry Unit (12" CMU) - Exterior</i>										
<i>04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet</i>										
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 Cncr blk,extr,tool'd jnts both sides,norml wt,2000 psi,12"8"16",incld mortr and hrznt joint mfrnc every other cours,excl'd scfl,grout and vrtcl nfrnc	1,260.00	SF	30,357	11,691	-	-	-	33.372 /SF	42,049
n	0300 Cncr blk,extr,tool'd jnts both sides,norml wt,2000 psi,12"8"16",incld mortr and hrznt joint mfrnc every other cours,excl'd scfl,grout and vrtcl nfrnc	126.00	sf	3,036	1,169	-	-	-	33.372 /sf	4,205
<i>04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet</i>				51,352	29,781		897		65.103/SF	82,029
1,260.00 SF										
401.542 Labor hours										
16.442 Equipment hours										
<i>04 22 01.012 Concrete Masonry Unit (12" CMU) - Exterior</i>				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%

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Detail Report with Contractor Markups

Item	Description	Takeoff Qty	Labor		Material		Subcontract		Equipment		Other		Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount				
DIVISION 05 METALS														
<i>05 51 00.020 Metal Stairs - Aluminum</i>														
<i>05 51 00.020.100 Aluminum Stairs, 4' Wide + Aluminum Landings</i>														
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	/RIS R	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	
	<i>05 51 00.020.100 Aluminum Stairs, 4' Wide + Aluminum Landings</i>			<u>13,881</u>	<u>94,351</u>				<u>980</u>		<u>2,730.316</u>	<u>/RISR</u>	<u>109,213</u>	
	40.00 RISR													
	92.125 Labor hours													
	23.031 Equipment hours													
	<i>05 51 00.020 Metal Stairs - Aluminum</i>			<u>13,881</u>	<u>94,351</u>	<u>0</u>			<u>980</u>	<u>0</u>	<u>2,730.316</u>	<u>/RISR</u>	<u>109,213</u>	
	40.00 RISR													
	92.125 Labor hours													
	23.031 Equipment hours													
<i>05 51 36.005 Metal Walkways</i>														
<i>05 51 36.005.100 Metal Walkways, 400 Sq. Ft.</i>														
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	
	<i>05 51 36.005.100 Metal Walkways, 400 Sq. Ft.</i>			<u>16,255</u>	<u>61,255</u>				<u>136</u>		<u>194.115</u>	<u>/SF</u>	<u>77,646</u>	
	400.00 SF													
	108.812 Labor hours													
	3.20 Equipment hours													
	<i>05 51 36.005 Metal Walkways</i>			<u>16,255</u>	<u>61,255</u>	<u>0</u>			<u>136</u>	<u>0</u>	<u>194.115</u>	<u>/SF</u>	<u>77,646</u>	
	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

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
<i>05 52 13.103 Aluminum Railings - 3 Rail</i>										
<i>05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.</i>										
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
	<i>05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.</i>		<u>7,391</u>	<u>51,278</u>			<u>522</u>		<u>281.860/LF</u>	<u>59,191</u>
	210.00 LF									
	49.051 Labor hours									
	12.263 Equipment hours									
<i>05 52 13.103 Aluminum Railings - 3 Rail</i>			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

<i>07 54 19.010 PVC Membrane Roofing - Fully Adhered</i>										
<i>07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.</i>										
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%

City of Angleton_WWTP Blower Building_Concept

5/13/2026 9:50 AM

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>07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.</i>										
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	
<i>07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.</i>			<u>13,351</u>	<u>15,880</u>		<u>116</u>		<u>6,521.564/SQ</u>	<u>29,347</u>	
	4.50 SQ									
	102.814 Labor hours									
	2.077 Equipment hours									
<i>07 54 19.010 PVC Membrane Roofing - Fully Adhered</i>			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>			<u>1,508</u>	<u>3,485</u>				<u>4,993.83 /EA</u>	<u>4,994</u>
	1.00 EA								

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 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
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	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	15,768.92 /EA	15,769
	1.00 EA								
	23.20 Labor hours								
DIVISION 08 OPENINGS			4,970	15,792	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

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
23.00.00.011 n	HVAC Allowance - Process Area Ventillation 23.00.00.011 HVAC Allowance	450.00	SF			35,162 35,162		-	78.138 /SF	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 n	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		940.855/LF	79,973
85.00 LF											
157.265 Labor hours											
57.728 Equipment hours											
40 05 23.112.110	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 23.2.12	Fittings - Stainless Steel, 12" Dia													
40 05 23.2.12.100	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 23.2.12.100 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 23.2.12 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

Detail Report with Contractor Markups

Item	Description	Takeoff Qty	Labor	Material	Subcontract	Equipment	Other	Total	
			Amount	Amount	Amount	Name	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
	450.00 SF								
	3,136.662 Labor hours								
	1,417.111 Equipment hours								

Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

Angleton WTP

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	

Upper Range +50%

AACE Classification Accuracy Range

Lower Range -30%

City of Angleton_WWTP Blower Building_Concept

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

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
001.10 GENERAL REQUIREMENTS										
DIVISION 01 GENERAL REQUIREMENTS										
<i>01 55 00.000 Staging</i>										
<i>01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.</i>										
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
	<i>01 55 00.000.100 Staging Areas Allowance, Gravel & Temporary Fencing - 400 Sq. Ft.</i>		<u>448</u>	<u>686</u>			<u>21</u>		<u>25.646/SY</u>	<u>1,154</u>
	45.00 SY									
	6.712 Labor hours									
	0.585 Equipment hours									
	<i>01 55 00.000 Staging</i>		<u>448</u>	<u>686</u>	<u>0</u>		<u>21</u>	<u>0</u>	<u>115.409/MO</u>	<u>1,154</u>
	10.00 MO									
	6.712 Labor hours									
	0.585 Equipment hours									
<i>01 88 03.000 Construction Phasing Costs</i>										
<i>01 88 03.000.100 Construction Phasing Costs</i>										
1910	Construction Phasing Costs	1.00 LS		0	<u>200,000</u>			-	<u>200,000.000 /LS</u>	<u>200,000</u>
	<i>01 88 03.000.100 Construction Phasing Costs</i>				<u>200,000</u>				<u>200,000.000/LS</u>	<u>200,000</u>
	1.00 LS									
	<i>01 88 03.000 Construction Phasing Costs</i>		<u>0</u>	<u>0</u>	<u>200,000</u>		<u>0</u>	<u>0</u>	<u>200,000.000/LS</u>	<u>200,000</u>
	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									

Upper Range +50%

AACE Classification Accuracy Range

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	Equipment	Other	Total		
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
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
	<i>02 41 00.020.110 General Site Demolition, Asphalt Pavement - 1,500 Sq. Ft.</i>		3,351	4,170			2,319		58.925/SY	9,840
	167.00 SY									
	50.348 Labor hours									
	44.795 Equipment hours									
	<i>02 41 00.020 General Site Demolition, Asphalt Pavement</i>		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

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 06.000.105 Utility and Yard Pipe Demolition		848	400			314		39.06C/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	39.06C/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		7.06C/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	7.06C/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

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
<u>32 12 16.130 Plant-Mix Asphalt Paving</u>										
<u>32 12 16.130.110 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
	<i>32 12 16.130.110 Asphalt Pavement Replacement Allowance, 04" binder x 02" wearing course x 2,500 Sq. Ft.</i>		2,728	13,600			2,991		69.55 /SY	19,319
	277.778 SY									
	40.608 Labor hours									
	27.174 Equipment hours									
<u>32 12 16.130 Plant-Mix Asphalt Paving</u>			2,728	13,600	0		2,991	0	69.55 /SY	19,319
	277.778 SY									
	40.608 Labor hours									
	27.174 Equipment hours									
<u>32 16 13.013 Cast-In-Place Concrete Curbs and Gutters</u>										
<u>32 16 13.013.100 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
	<i>32 16 13.013.100 Curb & gutter, Steel forms, 24" Wide x 6" High x 200 Linear feet</i>		1,734	3,118					24.259 /LF	4,852
	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

Design Stage:

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				
32 16 13.013	Cast-In-Place Concrete Curbs and Gutters		1,734	3,118	0			0	0	24.25\$/LF			4,852	
	200.00 LF													
	24.533 Labor hours													
32 92 00.020 Landscaping Allowance														
32 92 00.020.100	Landscaping Allowance	1.00 LS			5,000							5,000.00 /LS	5,000	
	32 92 00.020.100 Landscaping Allowance				5,000							5,000.00 /LS	5,000	
	1.00 LS													
32 92 00.020	Landscaping Allowance		0	0	5,000			0	0	5,000.00 /LS			5,000	
	1.00 LS													
DIVISION 32 EXTERIOR IMPROVEMENTS			4,462	16,718	5,000			2,991	0	29,171.17 /LS			29,171	
	1.00 LS													
	65.141 Labor hours													
	27.174 Equipment hours													
005.15 SITE / CIVIL / STORMWATER			9,210	21,288	5,000			6,256	0	41,753.08 /LS			41,753	
	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	-	-	-				385,191	-	2,567.94 /day		385,191	
1700	Mobilization or demobilization, crane, truck-mounted, up to 75 ton, (driver only)	2.00 ea	316	-	-				-	-	158.020 /ea		316	
n 5000	Crane Operator	150.00 day	94,812	-	-				-	-	632.080 /day		94,812	
n 0220	Relocate blowers - 6 Man Crew x 3 Days each blower	9.00 DAY	32,732	-	-				-	-	3,636.84 /DAY		32,732	
1485	(TRL2) Flatbed Trailer, 40 Ton - 10 hours x 6 days	60.00 mh	-	-	-				2,100	-	35.00 /mh		2,100	

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
	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	

AACE Classification Accuracy Range

Upper Range +50%

Lower Range -30%

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5/13/2026 9:50 AM

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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
<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		1,814.636/CY	7,259
	4.00 CY									
	10.599 Labor hours									
	0.646 Equipment hours									
<hr/>										
	<i>03 12 00.000 Cast-In-Place Concrete, Pad Footings</i>		798	1,425	5,000		35	0	1,814.636/CY	7,259
	4.00 CY									
	10.599 Labor hours									
	0.646 Equipment hours									
<hr/>										
<i>03 23 30.030 CIP Square Column 30"</i>										
<hr/>										
<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%

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	Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost
<i>03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total</i>									
n	0022 Concrete finishing, columns, includes breaking ties and patching voids	530.00 sf	544	16	-	-	-	1.057 /sf	560
	<i>03 23 24.030.110 Stilts, CIP Square Column 30" x 24' Ht. x 4 Total</i>		13,284	16,362		419		1,352.941/CY	30,065
	22.222 CY								
	180.286 Labor hours								
	7.446 Equipment hours								
<i>03 23 30.030 CIP Square Column 30"</i>			13,284	16,362	0	419	0	1,352.941/CY	30,065
	22.222 CY								
	180.286 Labor hours								
	7.446 Equipment hours								
<i>03 24 00.024 24" Elevated Slab</i>									
<i>03 24 00.024.000 24" Elevated Slab x 450 Sq. Ft.</i>									
	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

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	Equipment	Other	Total		
				Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
<i>03 24 00.024.000 24" Elevated Slab x 450 Sq. Ft.</i>											
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
<i>03 24 00.024.000 24" Elevated Slab x 450 Sq. Ft.</i>				9,789	16,034		332		792.560	/CY	26,154
33.00 CY											
134.256 Labor hours											
8.162 Equipment hours											
<i>03 24 00.024 24" Elevated Slab</i>				9,789	16,034	0	332	0	792.560	/CY	26,154
33.00 CY											
134.256 Labor hours											
8.162 Equipment hours											
<i>03 41 00.001 Precast Concrete - Tees</i>											
<i>03 41 00.001.120 Precast double tee roof x 450 Sq. Ft.</i>											
	0350 Precast tees, double, floor, 50' span, prestressed	450.00	SF	385	5,603	-	189	-	13.727	/SF	6,177
<i>03 41 00.001.120 Precast double tee roof x 450 Sq. Ft.</i>				385	5,603		189		13.727	/SF	6,177
450.00 SF											
5.063 Labor hours											
0.563 Equipment hours											
<i>03 41 00.001 Precast Concrete - Tees</i>				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 04

MASONRY

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
<i>04 22 01.012 Concrete Masonry Unit (12" CMU) - Exterior</i>										
<i>04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet</i>										
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	Cncr blk,extr,tool'd jnts both sides,norml wt,2000 psi,12"8"16",incld mortr and hrznt joint mfrnc every other cours,excl'd scffl,grout and vrtcl rnfrcn	1,260.00	SF	15,540	5,985	-	-	-	17.084 /SF	21,525
n 0300	Cncr blk,extr,tool'd jnts both sides,norml wt,2000 psi,12"8"16",incld mortr and hrznt joint mfrnc every other cours,excl'd scffl,grout and vrtcl rnfrcn	126.00	sf	1,554	599	-	-	-	17.084 /sf	2,153
<i>04 22 01.012.105 CMU Exterior Wall, Regular Block, 12" Thick x 14' Ht. x 90 Linear Feet</i>										
				26,288	15,245		459		33.327/SF	41,992
1,260.00 SF										
401.542 Labor hours										
16.442 Equipment hours										
<i>04 22 01.012 Concrete Masonry Unit (12" CMU) - Exterior</i>				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

Upper Range +50%

Lower Range -30%

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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				
DIVISION 05 METALS														
<i>05 51 00.020 Metal Stairs - Aluminum</i>														
<i>05 51 00.020.100 Aluminum Stairs, 4' Wide + Aluminum Landings</i>														
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	
	<i>05 51 00.020.100 Aluminum Stairs, 4' Wide + Aluminum Landings</i>			<u>7,106</u>	<u>48,300</u>				<u>502</u>		<u>1,397.692/RISR</u>		<u>55,908</u>	
	40.00 RISR													
	92.125 Labor hours													
	23.031 Equipment hours													
	<i>05 51 00.020 Metal Stairs - Aluminum</i>			<u>7,106</u>	<u>48,300</u>	<u>0</u>			<u>502</u>	<u>0</u>	<u>1,397.692/RISR</u>		<u>55,908</u>	
	40.00 RISR													
	92.125 Labor hours													
	23.031 Equipment hours													
<i>05 51 36.005 Metal Walkways</i>														
<i>05 51 36.005.100 Metal Walkways, 400 Sq. Ft.</i>														
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	
	<i>05 51 36.005.100 Metal Walkways, 400 Sq. Ft.</i>			<u>8,321</u>	<u>31,357</u>				<u>70</u>		<u>99.370/SF</u>		<u>39,748</u>	
	400.00 SF													
	108.812 Labor hours													
	3.20 Equipment hours													
	<i>05 51 36.005 Metal Walkways</i>			<u>8,321</u>	<u>31,357</u>	<u>0</u>			<u>70</u>	<u>0</u>	<u>99.370/SF</u>		<u>39,748</u>	
	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:

Detail Report - Direct Costs

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Item	Description	Takeoff Qty	Labor	Material	Subcontract	Equipment	Other	Total		
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
<i>05 52 13.103 Aluminum Railings - 3 Rail</i>										
<i>05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.</i>										
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
	<i>05 52 13.103.100 Aluminum Railing, clear finish, 3 rails, 3'6" high, 1.5" dia.</i>		<u>3,784</u>	<u>26,250</u>			<u>267</u>		<u>144.289/LF</u>	<u>30,301</u>
	210.00 LF									
	49.051 Labor hours									
	12.263 Equipment hours									
<i>05 52 13.103 Aluminum Railings - 3 Rail</i>			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

<i>07 54 19.010 PVC Membrane Roofing - Fully Adhered</i>										
<i>07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.</i>										
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

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	Equipment	Other	Total		
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
<i>07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.</i>										
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	
<i>07 54 19.010.110 PVC Membrane Roofing - Fully Adhered - 450 Sq. Ft.</i>			<u>6,834</u>	<u>8,129</u>			<u>59</u>	<u>3,338.49 /SQ</u>	<u>15,023</u>	
	4.50 SQ									
	102.814 Labor hours									
	2.077 Equipment hours									
<i>07 54 19.010 PVC Membrane Roofing - Fully Adhered</i>			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

<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	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
<i>08 11 16.030.110 Aluminum Doors & Frames - 3' x 7' x 1 Total</i>			<u>772</u>	<u>1,784</u>				<u>2,556.42 /EA</u>	<u>2,556</u>
	1.00 EA								

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	Equipment	Other	Total	
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost
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	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	8,072.36 /EA	8,072
	1.00 EA								
	23.20 Labor hours								
DIVISION 08 OPENINGS			2,544	8,084	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

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	Equipment	Other	Total		
				Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
23.00.00.011 n	HVAC Allowance - Process Area Ventillation 23.00.00.011 HVAC Allowance	450.00	SF			18,000 18,000		-	40.00 /SF	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 n		Stainless Steel, Welded 316, 12" Dia.									
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	Amount	Amount	Amount	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 23.2.12	Fittings - Stainless Steel, 12" Dia														
40 05 23.2.12.100	Fittings - Stainless Steel, 12" Dia														
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 23.2.12.100 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 23.2.12 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	Equipment	Other	Total		
			Amount	Amount	Amount	Name	Amount	Amount	Unit Cost	Amount
	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									

Upper Range +50%

AACE Classification Accuracy Range

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.