Smith & Loveless Inc.
Above All Others.™

FEATURED PROJECT

Baton Rouge, Louisiana
South Wastewater Treatment Plant

Project Location

Baton Rouge, LA
South Wastewater Treatment Plant
205 MGD Preliminary Treatment System

Installed:	2013
Engineer:	CDM Smith
Contractor:	Brasfield & Gorrie

S&L Equipment Overview

- 6 Model 50F PISTA® 360™ with V-FORCE BAFFLE™ Units
- 5 Service Units; 1 Stand-by Unit
- Designed for 41 MGD per Unit
- Patented Hydraulic Vortex with Internal Flow Control Baffling
- 360° Flat Floor Chamber Design
- 316 Stainless Steel Wetted Parts
  (Drive Tube, Propeller, Floor Plates, Fluidizer)
- 28' Diameter per Unit

Grit Test Results

Conducted:	July 2014
Total In:	679 g
Total Out:	14 g
Removal Efficiency:	97.9%

Down to 140 mesh / 105 micron

For project inquiries and complete technical support, contact Smith & Loveless by phone (800) 898-9122 or online at **smithandloveless.com.**

Featuring Six S&L PISTA® 360™ Grit Chambers

WWTP Plant Upgrade Achieves 98% Grit Removal with PISTA® 360™

Home to the state capital, two major universities, several Fortune 1000 companies, and a rich cultural heritage, the City of Baton Rouge is one of America's most dynamic, growing cities. "Red Stick" dates back to 1699 when Europeans began settling there and establishing military strongholds as early as 1719. Today, and seven national flags later, the City serves as the seat of Louisiana's most populated parish, East Baton Rouge (pop. 440,171), and the center of a burgeoning metropolitan area of more than 800,000.

Historically, the unified City-Parish Department of Public Works has operated three different wastewater treatment plants, North, Central, and South. Since 2008, the City-Parish has undertaken monumental capital improvements to expand its wastewater collection and treatment infrastructure. Plans called for the eventual decommission of its Central Plant and diverting its flows to an expanded and upgraded South Plant (SWWTP). The City-Parish estimates than more than $36 million per year will be saved in future long-term capital and operational costs with Central's closure and consolidation.

*2 Hp Drive Unit—**PISTA® 360™***

In order to handle the increased capacities, several segments of the SWWTP required significant overhaul and expansion, accomplished in three major improvement projects. The second of these projects includes a new 205 MGD preliminary treatment system. Phase I, designed by CDM Smith (Baton Rouge), went online in March 2013 and features a more efficient screening and grit removal system with larger capacity. The entire facility is divided into six 41-MGD trains, including six **PISTA® 360™** Grit Chambers each equipped with a patented **V-FORCE BAFFLE™**.

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S&L provides six grit chambers as part of new 205 mgd preliminary treatment facility

Grit removal is a necessary investment for the plant in order to protect the downstream equipment from abrasion. With a history of sanitary sewer overflows and build-up in its primary settling tanks from poor performing headworks, reliable performance over a range of daily flows was essential. Specifications called for removal efficiencies of 95 percent. Given its experience with large flow systems, project leader Phillip Gibson, P.E., turned to Smith & Loveless. With more than 2,500 **PISTA**® installations, including hundreds with individual capacities of 50 MGD and greater, Smith & Loveless offered the right expertise and equipment to assist in this project.

Beyond S&L experience, **PISTA**® technology offered specific benefits to fit the needs of the project. High removal efficiencies originate from the **PISTA® 360**™ Grit Chamber's hydraulic design, including its flat chamber floor, internal baffling and low-energy axial-flow propeller. The system's patented **V-FORCE BAFFLE**™ is an integral flow control device for both the inlet and outlet of the chamber. It directs the inlet flow into the chamber, ensuring the proper vortex flow. This sweeps the grit along the flat floor toward the center opening of the lower grit storage hopper. The baffle allows for a full 360° flow rotation and provides maximum travel for the most effective grit removal. In the outlet, the **V-FORCE BAFFLE**™ directs the flow out of the unit and acts as a "slice weir" to control the water level in the main chamber and in the inlet channel. No additional downstream flow control device is required to keep the velocity between 3.5 fps (1.1 mps) at peak flow and 1.6 fps (.5 mps) at minimum flow with a 10:1 turn down. By increasing chamber velocity during low flow periods, the baffle extends the grit extraction path within the vortexing grit chamber.

*These **PISTA® 360**™ Grit Chambers feature 316 stainless steel wetted parts.*

*The **PISTA® 360**™ Grit Chambers at SWWTP tested at 98% removal efficiency down to the critical particle size of 140 mesh / 105 micron.*

Initial Grit Test Results

Although all phases of the SWWTP improvement will be completed at the conclusion of 2014, the new preliminary treatment system has been online for more than a year with partial flows. In July 2014, grit testing was undertaken to evaluate the incoming grit into the plant, and the removal efficiency performance of the new **PISTA**® system. Samples were taken over multiple days in the inlet and outlet channels utilizing thorough Cross-Channel Sampling methodology. The average daily flow was 23.8 MGD.

The overall results of the sampling are summarized in the table below, which demonstrates highly efficient removal results. A healthy amount of grit was collected across the inlet (nearly 680 g) to ensure that reliable testing could be established. Likewise samples were collected in the outlet. The cumulative results demonstrated excellent removal efficiency of 97.9% down to 105 micron / 140 mesh particle size.

Grit Testing Results

Conducted July 2014 / 23.8 MGD Avg. Flow

Test	Result
Total In	679 g
Total Out	14 g
Removal Efficiency	97.9%*

* Down to 140 mesh / 105 micron