



August 24, 2023

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State Environmental Commission  
State of Nevada  
901 South Stewart Street, Suite 4001  
Carson City, Nevada 89701-5249

**Re: Notice of Alleged Air Quality Violation and Order Nos. 3045 and 3046 Class II Air Quality Operating Permit AP3324-1253.03**

Dear State Environmental Commission:

We represent and are advising PCC Structural (‘‘PCC’’) in response to Notices of Alleged Violation (‘‘NOAV’’) Nos. 3045, 3046, 3047, and 3048 concerning air permit compliance at PCC’s Carson City, Nevada facility (‘‘Facility’’). Per my colleague Geoff Tichenor’s discussion with Sheryl Fontaine, Frederick Perdomo, Dan P. Nubel, and Ziwei Zheng on August 9, 2023, we are providing this submission to request a reduced penalty assessment for NOAVs Nos. 3045 and 3046 that is set forth in those notices.

PCC is committed to compliance with its air permit and has worked hard to quickly address the NOAVs. Likewise, PCC remains dedicated to working collaboratively with the Nevada Division of Environmental Protection (‘‘NDEP’’). This letter provides an update on PCC’s work to address each NOAV, including the two notices issued as warnings. In addition to this letter, PCC will have three representatives present at SEC’s September 7, 2023 penalty assessment meeting to provide testimony. These representatives will be Bryan McCampbell, Division Environmental Manager at PCC, David Leavitt, Facilities/EHS Manager for PCC’s Carson City, NV facility, and Conor Butkus from Stoel Rives.

**NOAV No. 3045 – Opacity Compliance Demonstration**

NOAV No. 3045 states that the Facility failed to conduct an Opacity Compliance Demonstration as required by its Class II Air Quality Operating Permit AP3324-1253.03, Section IV.A. This violation was discovered after the NDEP inspections of the Facility in February and March 2023. Upon verifying that the opacity demonstration had not occurred, PCC acted quickly to resolve the issue. The requisite testing was completed on April 28, 2023. A final report of this testing, which PCC completed before the NOAV was issued, was submitted to NDEP on July 21, 2023. That final report is included here as Exhibit A.

### **NOAV No. 3046 - Initial Performance Testing**

NOAV No. 3046 states that the Facility failed to conduct Initial Performance Testing as required by its Class II Air Quality Operating Permit AP3324-1253.03, Section IV.A. This violation was discovered and resolved in the same manner and at the same time as NOAV No. 3045 described above. The final report of the performance testing that PCC completed to address this NOAV is included here as Exhibit A.

### **Warning NOAVs**

NOAVs Nos. 3047 and 3048 were issued as warnings and as a result we understand SEC will not issue penalties for either. Still, PCC asked that we address these NOAVs here because PCC took both warnings seriously, investigated both, and has resolved the underlying issues, as described below.

NOAV No. 3047 identifies that Bader Grinders 1 and 2 at the Facility were not routed to dust collectors during NDEP's inspection. PCC addressed this issue by ensuring that these grinders (which operate very infrequently) are connected to the existing dust collector system, as demonstrated in the photos attached in Exhibit B.

NOAV No. 3048 concerns the Facility's reported exceedances of its maximum permitted throughput through various equipment. The previously reported exceedances were erroneous; they resulted from labor coding and throughput calculation errors that occurred within PCC's internal tracking system. The system calculates throughput by examining labor hours for the departments that generate emissions. Since workers were not properly inputting their time, the throughput calculations showed higher than actual throughput.

To redress this issue, PCC updated the method used in the tracking system to calculate throughput and is now cross-referencing labor code inputs with timecards and supervisor estimates. Therefore, the system no longer relies exclusively on specific time codes that were being improperly inputted. Future throughput reports will catch discrepancies between labor coding and work completed in departments that generate emissions. To add another layer of authentication, the Facility also informed the engineering company it uses to assist with throughput calculations, and it will now assist with cross-referencing labor codes with the other documentation mentioned above. PCC is confident these measures will ensure that future reports will accurately reflect the throughputs for the Facility's equipment that has permit conditioned throughput maximums.

### **Conclusion**

PCC appreciates the opportunity to provide this information. We are hopeful that when the State Environmental Commission ("SEC") is determining the penalty to assess for NOAV Nos. 3045 and 3046, it will consider this information and PCC's resolve to attain and remain in compliance

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with its air permit. We respectfully request that SEC assess a lower penalty for those NOAVs than was recommended by NDEP.

Very truly yours,



Conor Butkus

Enclosures

Exhibit A – Compliance Emissions Test Report

Exhibit B – Photographs of Bader Grinders 1 and 2 with dust collection installed

# Exhibit A

## Compliance Emissions Test Report



# Compliance Emissions Test Report

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*Prepared on behalf of*  
PCC Structurals, Inc.  
Carson City Facility

2727 Lockheed Way  
Carson City, Nevada 89706

Facility ID No. A0528  
Permit No. AP3324-1253.03  
Project No. M231408  
April 25 through 27, 2023





## **Compliance Emissions Test Report**

***Prepared on behalf of***  
**PCC Structurals, Inc.**  
**Carson City Facility**  
**2727 Lockheed Way, Carson City, Nevada 89706**  
**Facility ID No. A0528**  
**Permit No. AP3324-1253.03**  
**Project No. M213902**  
**April 25 through 27, 2023**

**Report Submittal Date**  
**July 18, 2023**

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**Project No. M231408**

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## 1.0 EXECUTIVE SUMMARY

Mostardi Platt conducted a compliance emissions test program for PCC Structurals, Inc. at their Carson City Facility located at 2727 Lockheed Way, Carson City, Nevada 89706. Testing was performed in order to demonstrate the facility met the initial and continued compliance as described in Permit No. AP3324-1253.03. Emissions from Systems 1 through 5, System 7, and System 9 are summarized in this report.

The test program demonstrated compliance with Permit No. AP3324-1253.03 following the guidelines set forth in Title 40, *Code of Federal Regulations*, Part 60 (40CFR60), and 40CFR63. Each of the below listed sources meet their emission limits.

The test locations, test dates, and test parameters are summarized below.

<b>TEST INFORMATION</b>		
<b>Test Locations</b>	<b>Test Dates</b>	<b>Test Parameter</b>
System 1	4/26/2023	Volatile Organic Compounds (VOC) and Visual Emissions (VE)
System 2	4/25/2023	Carbon Monoxide (CO), Sulfur Dioxide (SO <sub>2</sub> ), Nitrogen Oxides (NO <sub>x</sub> ), particulate matter less than 2.5 microns (PM <sub>2.5</sub> ), particulate matter less than 10 microns (PM <sub>10</sub> ), VE, VOC
System 3	4/25/2023 & 4/26/2023	Particulate Matter (PM), PM <sub>2.5</sub> , PM <sub>10</sub> , VE
System 5	4/27/2023	PM, PM <sub>2.5</sub> , PM <sub>10</sub> , VE
System 7	4/27/2023	PM, PM <sub>2.5</sub> , PM <sub>10</sub> , VE
System 9	4/26/2023	PM, PM <sub>2.5</sub> , PM <sub>10</sub> , VE

## 2.0 FACILITY DESCRIPTION

PCC Structurals, Inc. – Carson City Facility located at 2727 Lockheed Way, Carson City, NV 89706

### 2.1 Project Contact Information

<b>Location</b>	<b>Address</b>	<b>Contact</b>
Test Facility	PCC Structurals, Inc. Carson City Facility 2727 Lockheed Way Carson City, NV 89706	Randy Anderson (775) 883-3800 Randy.Anderson@pccstructurals.com
Testing Company Representative	Mostardi Platt 7715 Commercial Way, Suite 155 Henderson, NV 89014	Kyle Jones Project Manager (702) 425-2274 kjones@mp-mail.com

The test crew consisted of Messrs. R. Sollars, A. Sorce, T. Magana, R. Bocanegra, and K. Jones of Mostardi Platt.

## 3.0 COMPLIANCE RESULTS

Selected results of the test program are summarized below. A complete summary of emission test results follows the narrative portion of this report. Operating data was provided by PCC Structurals, Inc. and is found in Appendix M.

### 3.1 System 1 – S2.001 Melco Steel Autoclave

Measured Parameter	Emission Limit	Emission Results
VOC	1.73 lb/hr 6.34 ton/yr	0.004 lb/hr 0.015 ton/yr
VE	20% opacity	0%

### 3.2 System 2 – S2.002 through S2.005 Mold Burnout Furnaces<sup>1</sup>

Measured Parameter	Emission Limit	Emission Results
PM <sub>2.5</sub> , PM <sub>10</sub>	0.088 lb/hr 0.193 ton/yr	0.023 lb/hr <sup>2</sup> 0.082 ton/yr
SO <sub>2</sub>	0.0025 lb/hr 0.0088 ton/yr	0.0014 lb/hr 0.0050 ton/yr
NO <sub>x</sub>	0.41 lb/hr 1.47 ton/yr	0.363 lb/hr 1.293 ton/yr
CO	2.32 lb/hr 4.10 ton/yr	0.055 lb/hr 0.196 ton/yr
VOC	2.553 lb/hr 4.041 ton/yr	0.005 lb/hr 0.017 ton/yr
VE	20% opacity	0%

### 3.3 System 3 – S2.006 through S2.009 Air Furnaces

Measured Parameter	Emission Limit	Emission Results
PM, PM <sub>2.5</sub> , PM <sub>10</sub>	0.18 lb/hr 0.62 ton/yr	0.029 lb/hr <sup>2</sup> 0.103 ton/yr
VE	20% opacity	0%

### 3.4 System 4 – S2.011, S2.012, S2.014, S2.017, S2.018 Part Removal

Measured Parameter	Emission Limit	Emission Results
PM, PM <sub>2.5</sub> , PM <sub>10</sub>	0.21 lb/hr 0.74 ton/yr	0.132 lb/hr <sup>3</sup> 0.471 ton/yr
VE	20% opacity	0%

<sup>1</sup> S2.003 – Pacific Kiln Mold Burnout Furnace 1 – 4.2 MMBtu was tested for the compliance demonstration

<sup>2</sup> All particulate captured in the combined Method 5/202 sample train was considered PM<sub>2.5</sub> for determination of compliance.

<sup>3</sup> All particulate captured in the Method 5 sample train was considered PM<sub>2.5</sub> for determination of compliance

### 3.5 System 5 – S2.020-S2.027, S2.033, S2.037, S2.044 Sand Blast Cleaning Equipment

Measured Parameter	Emission Limit	Emission Results
PM, PM <sub>2.5</sub> , PM <sub>10</sub>	0.18 lb/hr 0.65 ton/yr	0.057 lb/hr <sup>3</sup> 0.203 ton/yr
VE	20% opacity	0%

### 3.6 System 7 – S2.029-S2.031 and S2.038-S2.042 Gate Removal Equipment

Measured Parameter	Emission Limit	Emission Results
PM, PM <sub>2.5</sub> , PM <sub>10</sub>	0.18 lb/hr 0.65 ton/yr	0.069 lb/hr <sup>3</sup> 0.246ton/yr
VE	20% opacity	0%

### 3.7 System 9 – S2.034 and S2.043 Ingot Cutoff Saw

Measured Parameter	Emission Limit	Emission Results
PM, PM <sub>2.5</sub> , PM <sub>10</sub>	0.18 lb/hr 0.65 ton/yr	0.138 lb/hr <sup>3</sup> 0.492 ton/yr
VE	20% opacity	0%

## 4.0 TEST METHODOLOGY

Emission testing was conducted following the United States Environmental Protection Agency (USEPA) methods specified in 40CFR60 and 40CFR63, Appendix A in addition the Mostardi Platt Quality Manual. Schematics of the test section diagrams and sampling trains used are included in Appendix A and B respectively. Calculation nomenclature are included in Appendix C. Laboratory analysis for each test run are included in Appendix D. The computerized reference method test data is included in Appendix E.

The following methodologies were used during the test program:

### 4.1 Methods 1 and 2 Volumetric Flowrate Determination

Gas velocity and volumetric flowrate are determined at the stack test location using Reference Methods 1 and 2.

Velocity pressures were determined by traversing the test location with an S-type pitot tube either as a stand-alone system or as an integrated portion of the Method 5 sampling trains. Temperatures are measured using K-type thermocouples with calibrated digital temperature indicators. The molecular weight and moisture content of the gases are determined to permit the calculation of the volumetric flowrate. Sampling points utilized are determined using Method 1, 40CFR60, following the table below. Oxygen and carbon dioxide concentrations were determined per section 8.6 of USEPA Method 2 – “for processes emitting essentially air, an analysis need not be conducted; use a dry molecular weight of 29.0” – the oxygen and carbon dioxide concentrations was assumed to be ambient. The following table summarizes the test section information and the number of points sampled.

Test Location	Stack Dimensions	Stack Area (square feet)	Test Parameters	Number of Sampling Points
System 1	0.25' diameter	0.05	VOC	16
System 2	2' x 2'	4.00	TPM, SO <sub>2</sub> , NO <sub>x</sub> , CO, VOC	25
System 3	0.5' diameter	0.196	TPM	24
System 4	2.5' diameter	4.909	FPM	24
System 5	2.5' diameter	4.909	FPM	24
System 7	1.416' x 2.083'	2.950	FPM	25
System 9	1.0' diameter	0.785	FPM	12

Cyclonic flow checks were performed prior to testing at each location and were all found to be without cyclonic flow.

#### 4.2 Method 3A Oxygen and Carbon Dioxide Determination

Stack gas O<sub>2</sub> and CO<sub>2</sub> concentrations and emission rates were determined in accordance with USEPA Method 3A, 40CFR60, Appendix A. A Servomex analyzer was used to determine the O<sub>2</sub> and CO<sub>2</sub> concentrations in the manner specified in the Method. The instrument has a paramagnetic detector and operates in the nominal range of 0% to 25% for O<sub>2</sub> with the specific range determined by the high-level calibration gas. The instrument has a nondispersive infrared-based detector and operates in the nominal range of 0% to 80% for CO<sub>2</sub> with the specific range determined by the high-level calibration gas.

High- and mid-range calibrations were performed using USEPA Protocol gas. Zero nitrogen (a low ppm pollutant in balance nitrogen calibration gases) was introduced during other instrument calibrations to check instrument zero. High- and a mid-range % O<sub>2</sub> and CO<sub>2</sub> levels in balance nitrogen were also introduced. Zero and mid-range calibrations were performed using USEPA Protocol gas. Calibration data are presented in Appendix H. Copies of the gas cylinder certifications are found in Appendix I. This testing met the performance specifications as outlined in the Method.

#### 4.3 Method 5 Filterable Particulate Matter Determination

Stack gas FPM concentrations and emission rates were determined in accordance with USEPA Method 5, 40CFR60, Appendix A. An Environmental Supply Company, Inc. sampling train was used to sample stack gas at an isokinetic rate with the probe and filter maintained at 248 +/- 25 degrees Fahrenheit, as specified in the Method. Four impingers were utilized in accordance with either USEPA Method 5 or 202 procedures. The impingers were weighed prior to and after each test run in order to determine moisture content of the stack gas. A minimum of 1.7 dscm were collected for each test run.

Particulate matter in the sample probe was recovered utilizing acetone; three passes of the probe brush through the entire probe were performed, followed by a visual inspection of the acetone exiting the probe. If the acetone solution was clear, the wash was considered complete. If the wash was not clear, additional passes of the probe brush were completed until the sample was clear. The nozzle will then be removed from the probe and cleaned in a similar manner, utilizing an appropriately sized nozzle brush. The filter and filter housing were recovered in a clean area. The filter housing was washed a minimum of three times with acetone and inspected for cleanliness, and the filter was placed in its corresponding petri dish. The acetone wash and the filter were labeled and marked, with final analysis performed at the Mostardi Platt laboratory in accordance with Method 5 procedures.

#### 4.4 Method 6C Sulfur Dioxide Determination

Stack gas sulfur dioxide concentrations and emission rates were determined in accordance with USEPA Method 6C, 40CFR60, Appendix A. A Thermo Scientific sulfur dioxide analyzer was used to determine sulfur dioxide concentrations, in the manner specified in the Method.

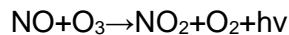
Stack gas was delivered to the analyzer via a Teflon® sampling line, heated to a minimum temperature of 250°F. Excess moisture in the stack gas was removed using a refrigerated condenser. The entire system was calibrated in accordance with the Method, using certified calibration gases introduced at the probe, before and after each test run.

Calibration data are presented in Appendix H. Copies of the gas cylinder certifications are found in Appendix I.

#### 4.5 Method 7E Nitrogen Oxides Determination

Stack gas NO<sub>x</sub> concentrations and emission rates were determined in accordance with USEPA Method 7E, 40CFR60, Appendix A. A Thermo Scientific Model 42i-HL Chemiluminescence Nitrogen Oxides Analyzer was used to determine nitrogen oxides concentrations, in the manner specified in the Method. The instrument operated in the nominal range of 0 ppm to 100 ppm with the specific range determined by the high-level span calibration gas.

The Model 42i operates on the principle that nitric oxide (NO) and ozone (O<sub>3</sub>) react to produce a characteristic luminescence with an intensity linearly proportional to the NO concentration. Infrared light emission results when electronically excited NO<sub>2</sub> molecules decay to lower energy states. Specifically,



Nitrogen dioxide (NO<sub>2</sub>) must first be transformed into NO before it can be measured using the chemiluminescent reaction. NO<sub>2</sub> is converted to NO by a stainless steel NO<sub>2</sub>-to-NO converter heated to about 638°C. The flue gas sample is drawn into the Model 42i through the sample bulkhead. The sample flows through a capillary, and then to the mode solenoid valve. The solenoid valve routes the sample either straight to the reaction chamber (NO mode) or through the NO<sub>2</sub>-to-NO converter and then to the reaction chamber (NO<sub>x</sub> mode). A flow sensor prior to the reaction chamber measures the sample flow. Dry air enters the Model 42i through the dry air bulkhead, passes through a flow switch, and then through a silent discharge ozonator. The ozonator generates the ozone needed for the chemiluminescent reaction. At the reaction chamber, the ozone reacts with the NO in the sample to produce excited NO<sub>2</sub> molecules. A photomultiplier tube (PMT) housed in a thermoelectric cooler detects the luminescence generated during this reaction. From the reaction chamber, the exhaust travels through the ozone (O<sub>3</sub>) converter to the pump and is released through the vent.

The NO and NO<sub>x</sub> concentrations calculated in the NO and NO<sub>x</sub> modes are stored in memory. The difference between the concentrations is used to calculate the NO<sub>2</sub> concentration. The Model 42i outputs NO, NO<sub>2</sub>, and NO<sub>x</sub> concentrations to the front panel display, the analog outputs, and also makes the data available over the serial or ethernet connection.

Stack gas was delivered to the analyzer via a Teflon® sampling line, heated to a minimum temperature of 250°F. Excess moisture in the stack gas was removed using a refrigerated condenser. The entire system was calibrated in accordance with the Method, using USEPA Protocol gases introduced at the probe, before and after each test run. This testing met the performance specifications as outlined in the Method.



A list of calibration gases used and the results of all calibration and other required quality assurance checks are found in Appendix H. Copies of the gas cylinder certifications are found in Appendix I. The NO<sub>2</sub> to NO converter test can be found in Appendix J. This testing met the performance specifications as outlined in the Method.

#### **4.6 Method 9 Visible Emissions Determination**

Visible emissions were determined in accordance with USEPA Method 9. The observer stood at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140° sector to his back. As much as possible, the line of vision was approximately perpendicular to the plume direction.

Opacity observations were made at the point of greatest opacity in the portion of the plume where condensed water vapor was not present. Observations were made to the nearest 5 percent at 15-second intervals for the duration of the test run.

Visible emissions observations were performed by certified visual emissions observers. Visible emissions data and copies of the reader certifications are presented in Appendix G.

#### **4.7 Method 10 Carbon Monoxide Determination**

Stack gas CO concentrations and emission rates were determined in accordance with USEPA Method 10, 40CFR60, Appendix A on System 23 only. A Thermo Scientific Model 48i Gas Filter Correlation Analyzer was used to determine carbon monoxide concentrations, in the manner specified in the Method. The instrument operated in the nominal range of 0 ppm to 100 ppm with the specific range determined by the high-level span calibration gas.

The Model 48i is based on the principle that CO absorbs infrared radiation at a wavelength of 4.6 microns. Because infrared absorption is a nonlinear measurement technique, it is necessary for the instrument electronics to transform the basic analyzer signal into a linear output. The Model 48i uses an exact calibration curve to accurately linearize the instrument output over any range up to a concentration of 10,000 ppm. The sample is drawn into the analyzer through the sample bulkhead. The sample flows through the optical bench. Radiation from an infrared source is chopped and then passed through a gas filter alternating between CO and N<sub>2</sub>. The radiation then passes through a narrow bandpass interference filter and enters the optical bench where absorption by the sample gas occurs. The infrared radiation then exits the optical bench and falls on an infrared detector. The CO gas filter acts to produce a reference beam which cannot be further attenuated by CO in the sample cell. The N<sub>2</sub> side of the filter wheel is transparent to the infrared radiation and therefore produces a measure beam which can be absorbed by CO in the cell. The chopped detector signal is modulated by the alternation between the two gas filters with an amplitude related to the concentration of CO in the sample cell. Other gases do not cause modulation of the detector signal since they absorb the reference and measure beams equally. Thus, the GFC system responds specifically to CO. The Model 48i outputs the CO concentration to the front panel display and the analog outputs.

Stack gas was delivered to the analyzer via a Teflon® sampling line, heated to a minimum temperature of 250°F. Excess moisture in the stack gas was removed using a refrigerated condenser. The entire system was calibrated in accordance with the Method, using USEPA protocol gases introduced at the probe, before and after each test run.

A list of calibration gases used and the results of all calibration and other required quality assurance checks are found in Appendix H. Copies of the gas cylinder certifications are found in Appendix I. This testing met the performance specifications as outlined in the Method

#### **4.8 Method 25A Total Hydrocarbons Determination**

Total Hydrocarbon (THC) concentrations and emission rates were determined in accordance with Method 25A on System 23 only. The flame ionization detector (FID) used during this program, was a Thermo 51i High-Temperature Total Hydrocarbon Analyzers. It is a highly sensitive FID that provides a direct reading of total organic vapor concentrations with linear ranges of 0-10, 100, 1000, and 10,000 ppm by volume. Stack gas was delivered to the system via a Teflon® sampling line, heated to a minimum temperature of 250°F.

The system was calibrated before and after each test run using certified calibration gases of propane. Calibration data are presented in Appendix H. Gas cylinder certifications are included in Appendix I. This testing met the performance specifications as outlined in the Method.

#### **4.9 Method 202 Condensable Particulate Matter Determination**

Stack gas CPM concentrations and emission rates were determined in accordance with U.S. EPA Method 202, in conjunction with Method 5 FPM sampling at each stack. This method applies to the determination of CPM emissions from stationary sources. It is intended to represent condensable matter as material that condenses after passing through a filter and as measured by this method.

CPM was collected in the water dropout, modified Greenburg Smith impinger and ambient filter portion of the sampling train as described in this Method. The impinger contents were purged with nitrogen (N<sub>2</sub>) immediately after sample collection to remove dissolved sulfur dioxide (SO<sub>2</sub>) gases from the impingers. The impinger solution was then extracted with DI water, acetone, and hexane. The organic and aqueous fractions were dried and the residues weighed. The total of the aqueous, organic, and ambient filter fractions represents the CPM. A field blank was also collected and analyzed.

All sample recovery was performed at the test site by the test crew. Mostardi Platt personnel at the laboratory in Elmhurst, Illinois, performed all final PM sample analyses. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H.

### 3.0 TEST RESULT SUMMARIES

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 1 - Autoclave  
**Test Method:** M25A

	Source Condition	Normal	Normal	Normal	
	Date	4/26/23	4/26/23	4/26/23	
	Start Time	6:44	7:59	9:14	
	End Time	7:44	8:59	10:14	
	Run 1	Run 2	Run 3	Average	
<b>Stack Conditions</b>					
Average Gas Temperature, °F	215.3	214.7	213.8	214.6	
Flue Gas Moisture, percent by volume	13.6%	12.7%	12.6%	13.0%	
Average Flue Pressure, in. Hg	25.34	25.34	25.34	25.34	
Gas Volumetric Flow Rate, dscfm	46	44	48	46	
Gas Volumetric Flow Rate, scfm	53	51	55	53	
Average %CO <sub>2</sub> by volume, dry basis	0.2	0.1	0.0	0.1	
Average %O <sub>2</sub> by volume, dry basis	20.7	21.3	21.0	21.0	
Yearly Operating Hours	7117.5	7117.5	7117.5	7,117.5	
<b>Gaseous Summary</b>					
THC ppm as C <sub>3</sub> H <sub>8</sub> (wet)	7.7	14.2	13.2	11.7	
THC ppm as C <sub>3</sub> H <sub>8</sub> (dry)	8.9	16.3	15.1	13.4	
THC lb/hr as C <sub>3</sub> H <sub>8</sub>	0.003	0.005	0.005	0.004	
THC ton/yr as C <sub>3</sub> H <sub>8</sub>	0.010	0.018	0.018	0.015	

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 2 - Mold Burnout  
**Test Method:** 6C, 7E, 10, 25A

	Source Condition	Normal	Normal	Normal
	Date	4/25/23	4/25/23	4/25/23
	Start Time	3:40	6:05	8:35
	End Time	5:39	8:00	10:30
	Run 1	Run 2	Run 3	Average
<b>Stack Conditions</b>				
Average Gas Temperature, °F	1211.4	1221.6	1158.8	1197.3
Flue Gas Moisture, percent by volume	7.1%	7.0%	7.1%	7.1%
Average Flue Pressure, in. Hg	25.22	25.22	25.22	25.22
Gas Volumetric Flow Rate, dscfm	2,112	2,087	2,115	2,105
Gas Volumetric Flow Rate, scfm	2,274	2,245	2,277	2,265
Average %CO <sub>2</sub> by volume, dry basis	4.7	5.0	4.3	4.7
Average %O <sub>2</sub> by volume, dry basis	13.1	12.5	13.8	13.1
Yearly Operating Hours	7117.5	7117.5	7117.5	7,117.5
<b>Gaseous Summary</b>				
THC ppm as C <sub>3</sub> H <sub>8</sub> (wet)	0.3	0.4	0.2	0.3
THC ppm as C <sub>3</sub> H <sub>8</sub> (dry)	0.3	0.4	0.2	0.3
THC lb/hr as C <sub>3</sub> H <sub>8</sub>	0.005	0.006	0.003	0.005
THC ton/yr as C <sub>3</sub> H <sub>8</sub>	0.017	0.022	0.011	0.017
NO <sub>x</sub> ppmvd	23.6	25.4	23.3	24.1
NO <sub>x</sub> lb/hr	0.357	0.380	0.353	0.363
NO <sub>x</sub> ton/yr	1.271	1.352	1.256	1.293
CO ppmvd	7.2	6.0	4.8	6.0
CO lb/hr	0.066	0.055	0.044	0.055
CO ton/yr	0.236	0.194	0.158	0.196
SO <sub>2</sub> ppmvd	0.000	0.100	0.100	0.067
SO <sub>2</sub> lb/hr	0.0000	0.0021	0.0021	0.0014
SO <sub>2</sub> ton/yr	0.0000	0.0074	0.0075	0.0050

Client: PCC Structurals, Inc.  
 Facility: Carson City Facility  
 Test Location: System 2 - Mold Burnout  
 Test Method: 5/202

Source Condition	Normal	Normal	Normal	
Date	4/25/23	4/25/23	4/25/23	
Start Time	3:40	6:05	8:35	
End Time	5:40	8:01	10:31	
	Run 1	Run 2	Run 3	Average
<b>Stack Conditions</b>				
Average Gas Temperature, °F	1211.4	1221.6	1158.8	1197.3
Flue Gas Moisture, percent by volume	7.1%	7.0%	7.1%	7.1%
Average Flue Pressure, in. Hg	25.22	25.22	25.22	25.22
Gas Sample Volume, dscf	72.426	71.514	72.153	72.031
Average Gas Velocity, ft/sec	35.590	35.341	34.517	35.149
Gas Volumetric Flow Rate, acfm	8,542	8,482	8,284	8,436
Gas Volumetric Flow Rate, dscfm	2,112	2,087	2,115	2,105
Gas Volumetric Flow Rate, scfm	2,274	2,245	2,277	2,265
Average %CO <sub>2</sub> by volume, dry basis	4.7	5.0	4.3	4.7
Average %O <sub>2</sub> by volume, dry basis	13.1	12.5	13.8	13.1
Isokinetic Variance	102.7	102.6	102.2	102.5
Yearly Operating Hours	7117.5	7117.5	7117.5	7,117.5
<b>Filterable Particulate Matter (Method 5)</b>				
grams collected	0.00334	0.00377	0.00184	0.00299
grains/acf	0.0002	0.0002	0.0001	0.0002
grains/dscf	0.0007	0.0008	0.0004	0.0006
lb/hr	0.013	0.015	0.007	0.012
ton/yr	0.046	0.053	0.025	0.042
<b>Condensable Particulate Matter (Method 202)</b>				
grams collected	0.00206	0.00253	0.00425	0.00295
grains/acf	0.0001	0.0001	0.0002	0.0001
grains/dscf	0.0004	0.0005	0.0009	0.0006
lb/hr	0.008	0.010	0.016	0.011
ton/yr	0.028	0.036	0.057	0.040
<b>Total Particulate Matter (5/202)</b>				
grams collected	0.00540	0.00630	0.00609	0.00593
grains/acf	0.0003	0.0003	0.0003	0.0003
grains/dscf	0.0011	0.0013	0.0013	0.0012
lb/hr	0.021	0.025	0.023	0.023
ton/yr	0.075	0.089	0.082	0.082

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 3 - Air Furnaces  
 Test Method: 5/202

	Source Condition	Normal	Normal	Normal
	Date	4/25/23	4/25/23	4/25/23
	Start Time	3:40	5:55	8:00
	End Time	5:23	7:38	9:42
	Run 1	Run 2	Run 3	Average
<b>Stack Conditions</b>				
Average Gas Temperature, °F	82.2	83.9	89.3	85.1
Flue Gas Moisture, percent by volume	0.7%	0.2%	0.0%	0.3%
Average Flue Pressure, in. Hg	25.27	25.27	25.27	25.27
Gas Sample Volume, dscf	68.729	74.71	74.053	72.497
Average Gas Velocity, ft/sec	103.666	103.510	103.214	103.463
Gas Volumetric Flow Rate, acfm	1,221	1,219	1,216	1,219
Gas Volumetric Flow Rate, dscfm	997	998	987	994
Gas Volumetric Flow Rate, scfm	1,004	1,000	987	997
Isokinetic Variance	93.9	102.0	102.2	99.4
Yearly Operating Hours	7117.5	7117.5	7117.5	7,117.5
<b>Filterable Particulate Matter (Method 5)</b>				
grams collected	0.01476	0.01517	0.01402	0.01465
grains/acf	0.0027	0.0026	0.0024	0.0026
grains/dscf	0.0033	0.0031	0.0029	0.0031
lb/hr	0.028	0.027	0.025	0.027
ton/yr	0.100	0.096	0.089	0.095
<b>Condensable Particulate Matter (Method 202)</b>				
grams collected	0.00165	0.00127	0.00103	0.00132
grains/acf	0.0003	0.0002	0.0002	0.0002
grains/dscf	0.0004	0.0003	0.0002	0.0003
lb/hr	0.003	0.002	0.002	0.002
ton/yr	0.011	0.007	0.007	0.008
<b>Total Particulate Matter (5/202)</b>				
grams collected	0.01641	0.01644	0.01505	0.01597
grains/acf	0.0030	0.0028	0.0026	0.0028
grains/dscf	0.0037	0.0034	0.0031	0.0034
lb/hr	0.031	0.029	0.027	0.029
ton/yr	0.110	0.103	0.096	0.103

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 4  
**Test Method:** 5

	Source Condition	Normal	Normal	Normal	
	Date	4/26/23	4/26/23	4/26/23	
	Start Time	7:00	9:15	11:15	
	End Time	8:46	10:56	12:56	
	Run 1	Run 2	Run 3	Average	
<b>Stack Conditions</b>					
Average Gas Temperature, °F	69.3	72.9	78.4	73.5	
Flue Gas Moisture, percent by volume	-1.6%	0.5%	0.4%	-0.2%	
Average Flue Pressure, in. Hg	25.39	25.39	25.39	25.39	
Gas Sample Volume, dscf	65.87	65.997	72.332	68.066	
Average Gas Velocity, ft/sec	34.982	35.952	39.743	36.892	
Gas Volumetric Flow Rate, acfm	10,303	10,589	11,705	10,866	
Gas Volumetric Flow Rate, dscfm	8,859	8,862	9,708	9,143	
Gas Volumetric Flow Rate, scfm	8,721	8,904	9,742	9,122	
Isokinetic Variance	101.6	101.8	101.8	101.7	
Yearly Operating Hours	7117.5	7117.5	7117.5	7,117.5	
<b>Filterable Particulate Matter (Method 5)</b>					
grams collected	0.01172	0.00632	0.00429	0.00745	
grains/acf	0.0024	0.0012	0.0008	0.0015	
grains/dscf	0.0027	0.0015	0.0009	0.0017	
lb/hr	0.209	0.112	0.076	0.132	
ton/yr	0.744	0.399	0.270	0.471	

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 5  
 Test Method: 5

	Source Condition	Normal	Normal	Normal	
	Date	4/27/23	4/27/23	4/27/23	
	Start Time	7:10	9:12	11:20	
	End Time	8:50	10:58	13:06	
	Run 1	Run 2	Run 3	Average	
<b>Stack Conditions</b>					
Average Gas Temperature, °F	75.6	80.3	85.4	80.4	
Flue Gas Moisture, percent by volume	0.8%	0.9%	0.9%	0.9%	
Average Flue Pressure, in. Hg	25.35	25.35	25.35	25.35	
Gas Sample Volume, dscf	80.788	89.572	82.758	84.373	
Average Gas Velocity, ft/sec	23.997	26.752	24.944	25.231	
Gas Volumetric Flow Rate, acfm	7,068	7,879	7,347	7,431	
Gas Volumetric Flow Rate, dscfm	5,857	6,463	5,970	6,097	
Gas Volumetric Flow Rate, scfm	5,903	6,524	6,026	6,151	
Isokinetic Variance	101.5	102.0	102.0	101.8	
Yearly Operating Hours	7117.5	7117.5	7117.5	7,117.5	
<b>Filterable Particulate Matter (Method 5)</b>					
grams collected	0.00886	0.00518	0.00386	0.00597	
grains/acf	0.0014	0.0007	0.0006	0.0009	
grains/dscf	0.0017	0.0009	0.0007	0.0011	
lb/hr	0.085	0.049	0.037	0.057	
ton/yr	0.302	0.174	0.132	0.203	



**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 7  
**Test Method:** 5/202

	Source Condition	Normal	Normal	Normal	
	Date	4/27/23	4/27/23	4/27/23	
	Start Time	6:20	8:28	10:30	
	End Time	8:05	10:12	12:14	
	Run 1	Run 2	Run 3	Average	
<b>Stack Conditions</b>					
Average Gas Temperature, °F	66.8	75.7	85.1	75.9	
Flue Gas Moisture, percent by volume	2.2%	2.2%	2.1%	2.2%	
Average Flue Pressure, in. Hg	25.31	25.31	25.31	25.31	
Gas Sample Volume, dscf	75.958	75.229	74.682	75.290	
Average Gas Velocity, ft/sec	23.082	23.242	23.477	23.267	
Gas Volumetric Flow Rate, acfm	4,085	4,113	4,155	4,118	
Gas Volumetric Flow Rate, dscfm	3,385	3,354	3,331	3,357	
Gas Volumetric Flow Rate, scfm	3,463	3,429	3,404	3,432	
Isokinetic Variance	102.0	102.0	101.9	102.0	
Yearly Operating Hours	7117.5	7117.5	7117.5	7,117.5	
<b>Filterable Particulate Matter (Method 5)</b>					
grams collected	0.03182	0.00173	0.00155	0.01170	
grains/acf	0.0054	0.0003	0.0003	0.0020	
grains/dscf	0.0065	0.0004	0.0003	0.0024	
lb/hr	0.188	0.010	0.009	0.069	
ton/yr	0.669	0.036	0.032	0.246	

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 9  
**Test Method:** 5/202

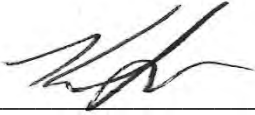
	Source Condition	Normal	Normal	Normal	
	Date	4/26/23	4/26/23	4/26/23	
	Start Time	6:45	8:40	10:35	
	End Time	8:25	10:20	12:15	
	Run 1	Run 2	Run 3	Average	
<b>Stack Conditions</b>					
Average Gas Temperature, °F	88.7	93.5	95.8	92.7	
Flue Gas Moisture, percent by volume	2.5%	2.3%	2.3%	2.4%	
Average Flue Pressure, in. Hg	25.34	25.34	25.34	25.34	
Gas Sample Volume, dscf	82.372	81.849	79.76	81.327	
Average Gas Velocity, ft/sec	13.660	13.728	13.397	13.595	
Gas Volumetric Flow Rate, acfm	644	647	631	641	
Gas Volumetric Flow Rate, dscfm	512	511	496	506	
Gas Volumetric Flow Rate, scfm	525	523	508	519	
Isokinetic Variance	102.3	101.9	102.1	102.1	
Yearly Operating Hours	7117.5	7117.5	7117.5	7,117.5	
<b>Filterable Particulate Matter (Method 5)</b>					
grams collected	0.20682	0.17563	0.12157	0.16801	
grains/acf	0.0308	0.0261	0.0185	0.0251	
grains/dscf	0.0387	0.0331	0.0235	0.0318	
lb/hr	0.170	0.145	0.100	0.138	
ton/yr	0.605	0.516	0.356	0.492	

## 4.0 CERTIFICATION

Mostardi Platt is pleased to have been of service to PCC Structurals, Inc. If you have any questions regarding this test report, please do not hesitate to contact us at 630-993-2100.

As the program manager, I hereby certify that this test report represents a true and accurate summary of emissions test results and the methodologies employed to obtain those results. The test program was performed in accordance with the test methods and the Mostardi Platt Quality Manual, as applicable.

MOSTARDI PLATT



Kyle L. Jones

Program Manager



Richard J. Sollars III

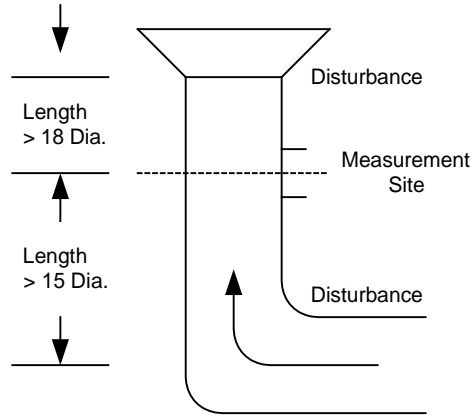
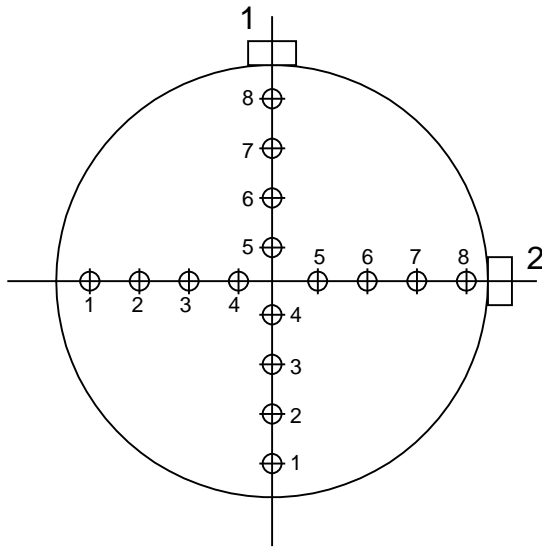
Quality Assurance

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## APPENDICES

## Appendix A - Test Section Diagram

# EQUAL AREA TRAVERSE FOR ROUND DUCTS



Job: PCC Structural  
Carson City Facility

Date: April 26, 2023

Test Location: System 1

Stack Diameter (Feet): 0.25

Stack Area (Square Feet): 0.05

No. Sample Points Across Diameter: 8

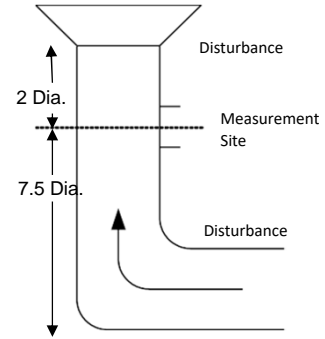
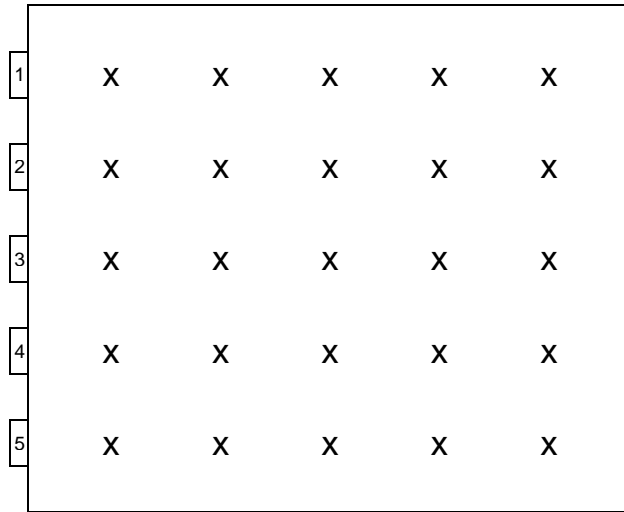
No. of Ports: 2

Port Length (Inches): 3.00

Distance from inside wall  
at port to traverse point:

1. 3.096 Feet (96.8 % of diameter)
2. 3.315 Feet (89.5 % of diameter)
3. 3.582 Feet (80.6 % of diameter)
4. 3.969 Feet (67.7 % of diameter)
5. 5.031 Feet (32.3 % of diameter)
6. 5.418 Feet (19.4 % of diameter)
7. 5.686 Feet (10.5 % of diameter)
8. 5.904 Feet (3.2 % of diameter)

## EQUAL AREA TRAVERSE FOR ROUND DUCTS

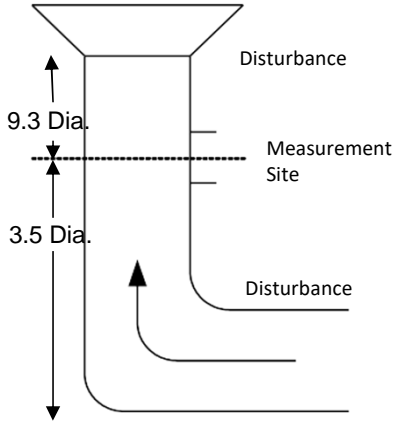
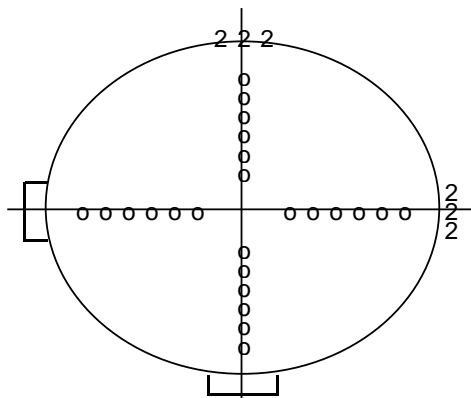


**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 2 - Mold Burnout  
**Date:** 04/25/23

Point Markings		
	From inside wall (in.)	% of Duct Length
1	2.4	10.00
2	7.2	30.00
3	12	50.00
4	16.8	70.00
5	21.6	90.00

**Diameter (Feet):** 4.000  
**Port Length (In):** 6.00  
**Ports Sampled:** 5  
**Points/Port:** 5

# EQUAL AREA TRAVERSE FOR ROUND DUCTS

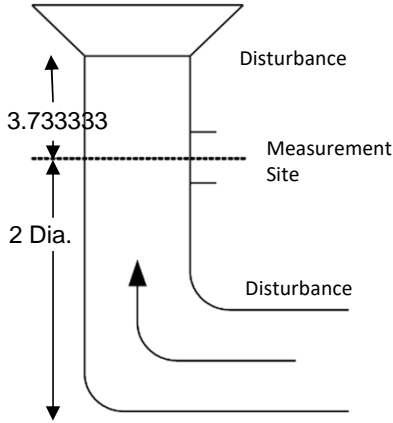
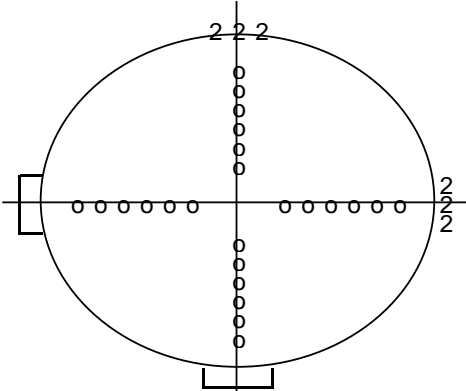


**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 3 - Air Furnaces  
**Date:** 04/25/23  
**Diameter (Feet):** 0.196  
**Port Length (In):** 0.00  
**Ports Sampled:** 2  
**Points/Port:** 12

	Point Markings	
	From inside wall (in.)	% of Diameter
1	0.13	2.10
2	0.40	6.70
3	0.71	11.80
4	1.06	17.70
5	1.50	25.00
6	2.14	35.60
7	3.86	64.40
8	4.50	75.00
9	4.94	82.30
10	5.29	88.20
11	5.60	93.30
12	5.87	97.90



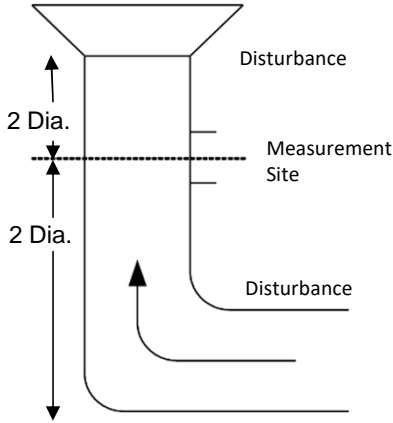
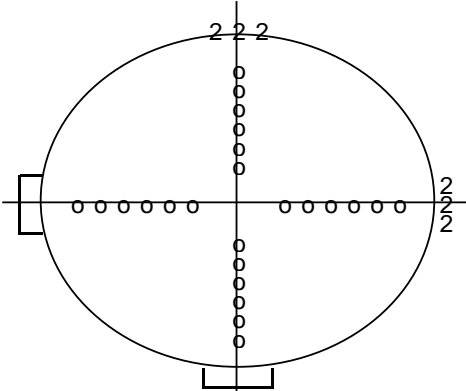
# EQUAL AREA TRAVERSE FOR ROUND DUCTS



**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 4  
**Date:** 04/26/23  
**Diameter (Feet):** 4.909  
**Port Length (In):** 0.00  
**Ports Sampled:** 2  
**Points/Port:** 12

	<b>Point Markings</b>	
	<b>From inside wall (in.)</b>	<b>% of Diameter</b>
1	0.63	2.10
2	2.01	6.70
3	3.54	11.80
4	5.31	17.70
5	7.50	25.00
6	10.68	35.60
7	19.32	64.40
8	22.50	75.00
9	24.69	82.30
10	26.46	88.20
11	27.99	93.30
12	29.37	97.90

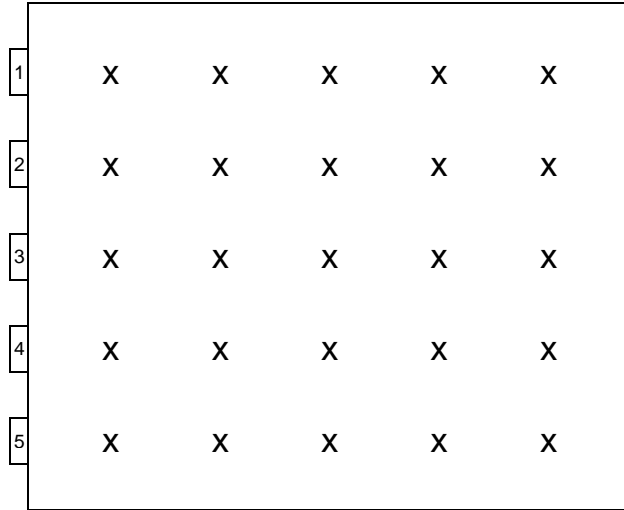
# EQUAL AREA TRAVERSE FOR ROUND DUCTS



**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 5  
**Date:** 04/27/23  
**Diameter (Feet):** 4.909  
**Port Length (In):** 0.00  
**Ports Sampled:** 2  
**Points/Port:** 12

Point Markings		
	From inside wall (in.)	% of Diameter
1	0.63	2.10
2	2.01	6.70
3	3.54	11.80
4	5.31	17.70
5	7.50	25.00
6	10.68	35.60
7	19.32	64.40
8	22.50	75.00
9	24.69	82.30
10	26.46	88.20
11	27.99	93.30
12	29.37	97.90

## EQUAL AREA TRAVERSE FOR ROUND DUCTS



**Client:** PCC Structurals

**Facility:** Carson City Facility

**Test Location:** System 7

**Date:** 04/27/23

**Diameter (Feet):** 2.950

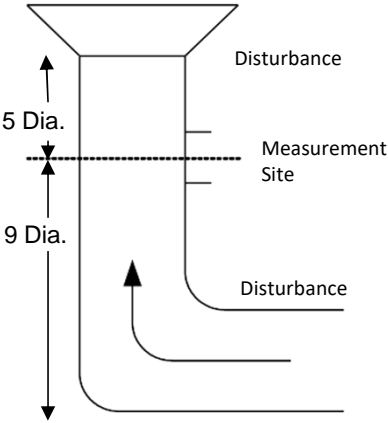
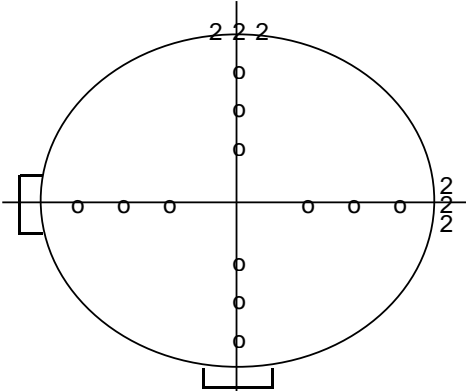
**Port Length (In):** 0.00

**Ports Sampled:** 5

**Points/Port:** 5

Point Markings		
	From inside wall (in.)	% of Duct Length
1	1.6992	10.00
2	5.0976	30.00
3	8.496	50.00
4	11.8944	70.00
5	15.2928	90.00

# EQUAL AREA TRAVERSE FOR ROUND DUCTS



**Client:** PCC Structurals

**Facility:** Carson City Facility

**Test Location:** System 9

**Date:** 04/26/23

**Diameter (Feet):** 0.785

**Port Length (In):** 0.00

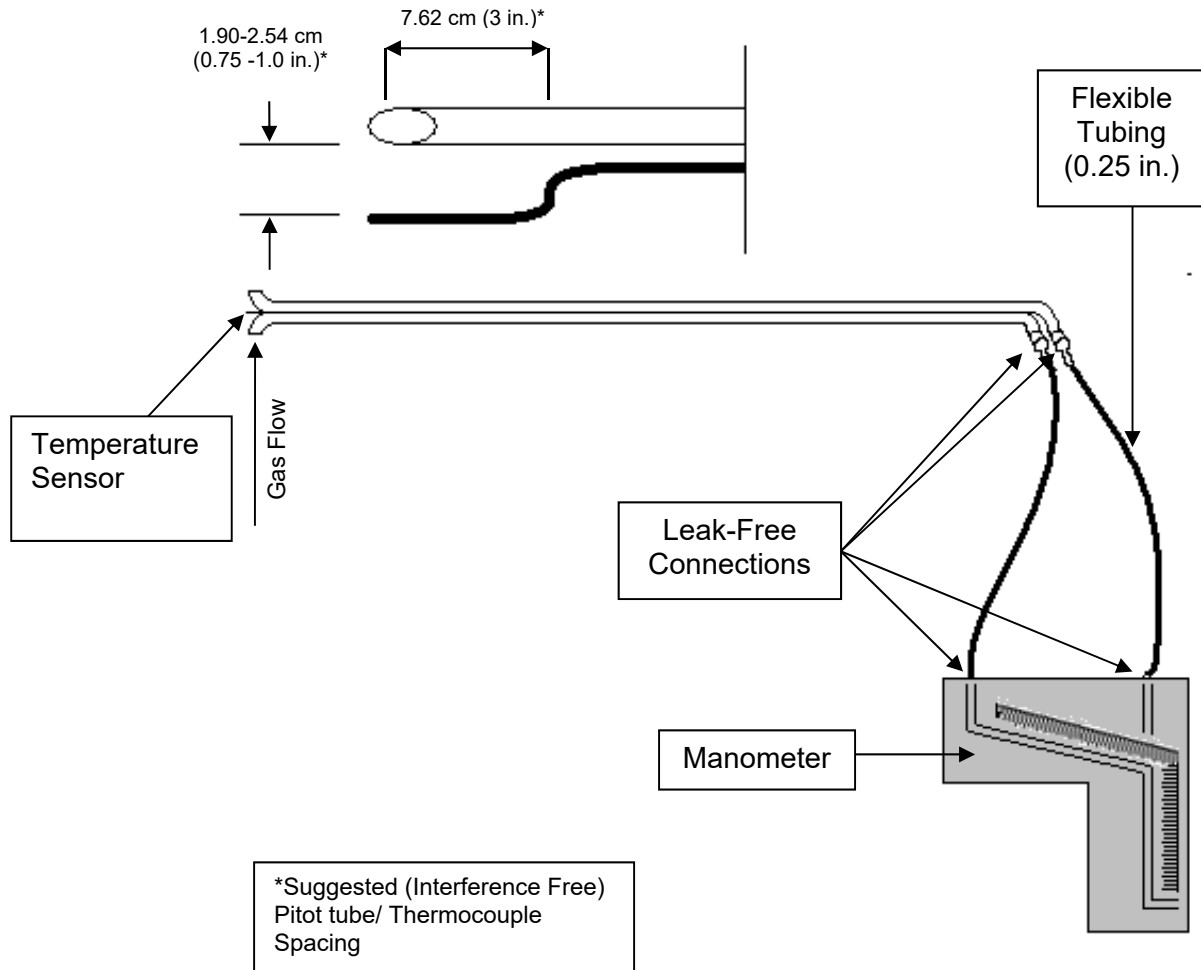
**Ports Sampled:** 2

**Points/Port:** 6

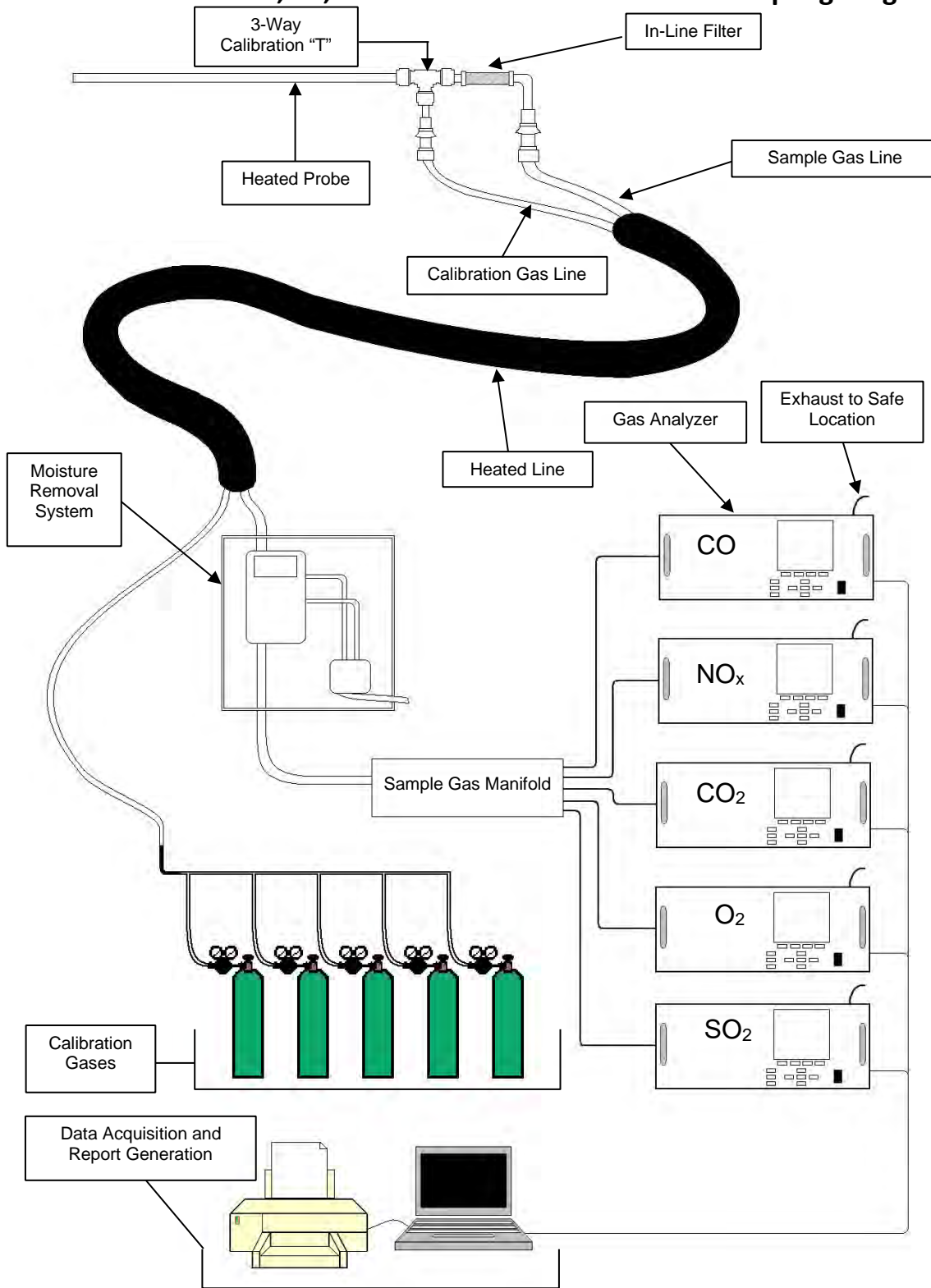
	<b>Point Markings</b>	
	<b>From inside wall (in.)</b>	<b>% of Diameter</b>
1	0.53	4.40
2	1.75	14.60
3	3.55	29.60
4	8.45	70.40
5	10.25	85.40
6	11.47	95.60

## Appendix B - Sample Train Diagrams

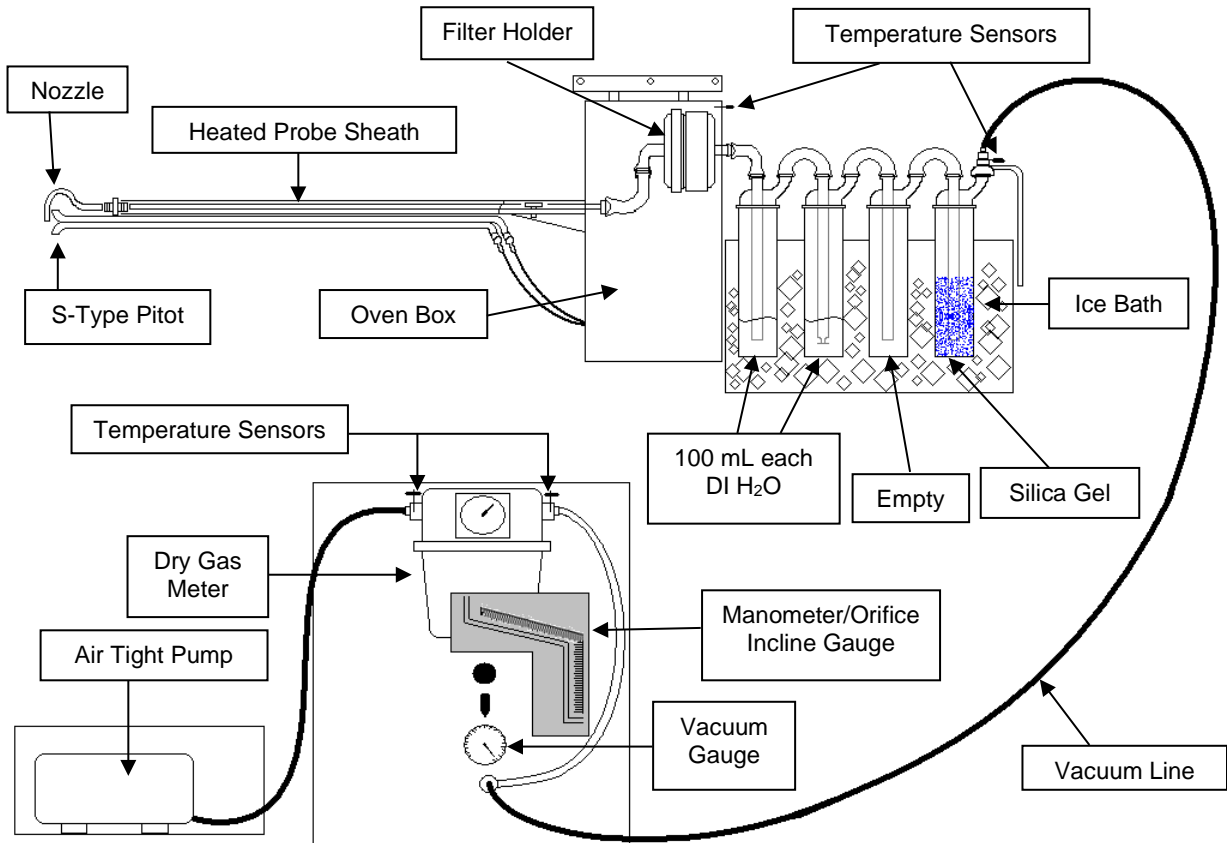
# USEPA Method 2 – Type S Pitot Tube Manometer Assembly



# USEPA Methods 3A, 6C, 7E and 10 Extractive Gaseous Sampling Diagram

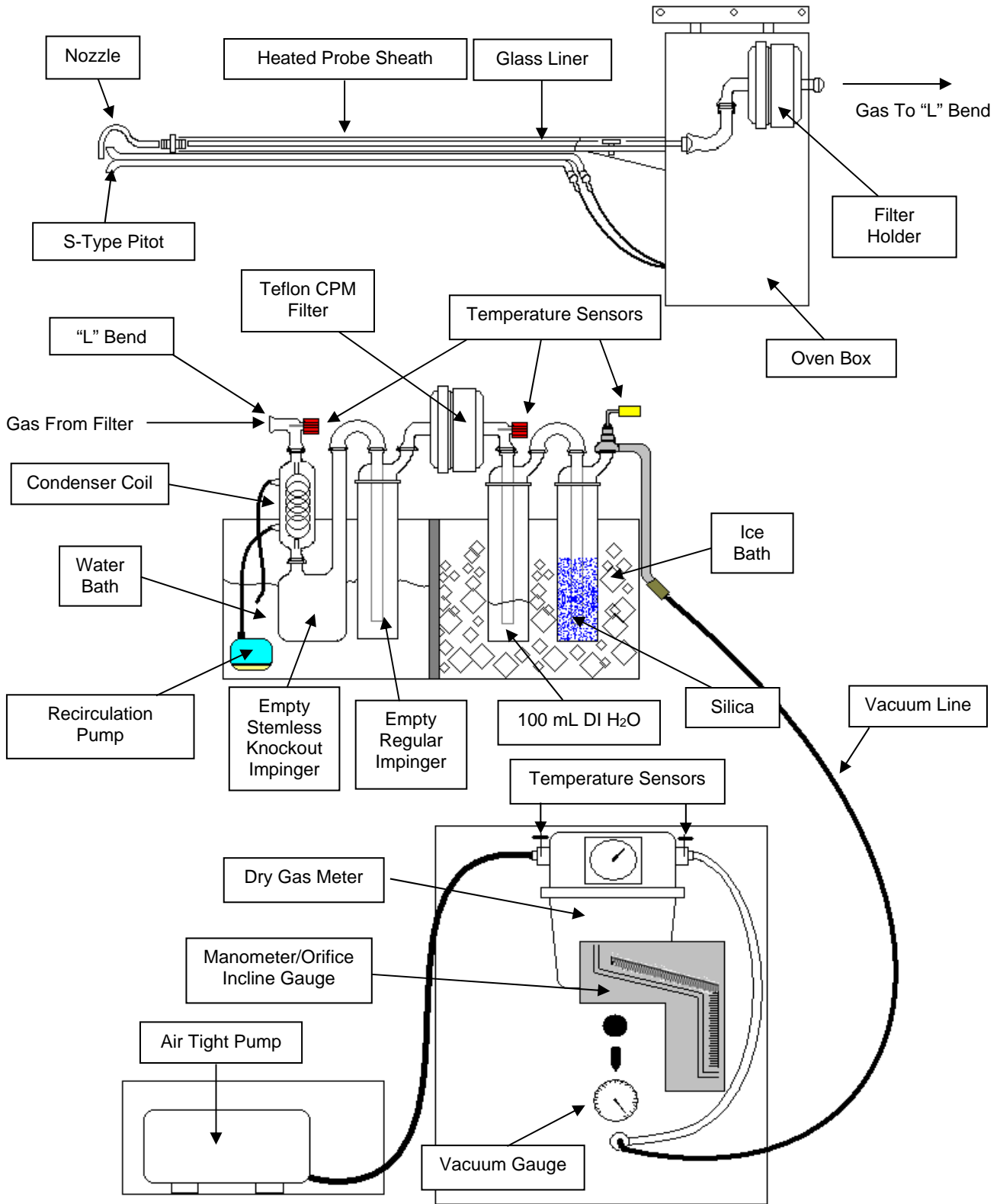


# USEPA Method 5- Particulate Matter Sample Train Diagram

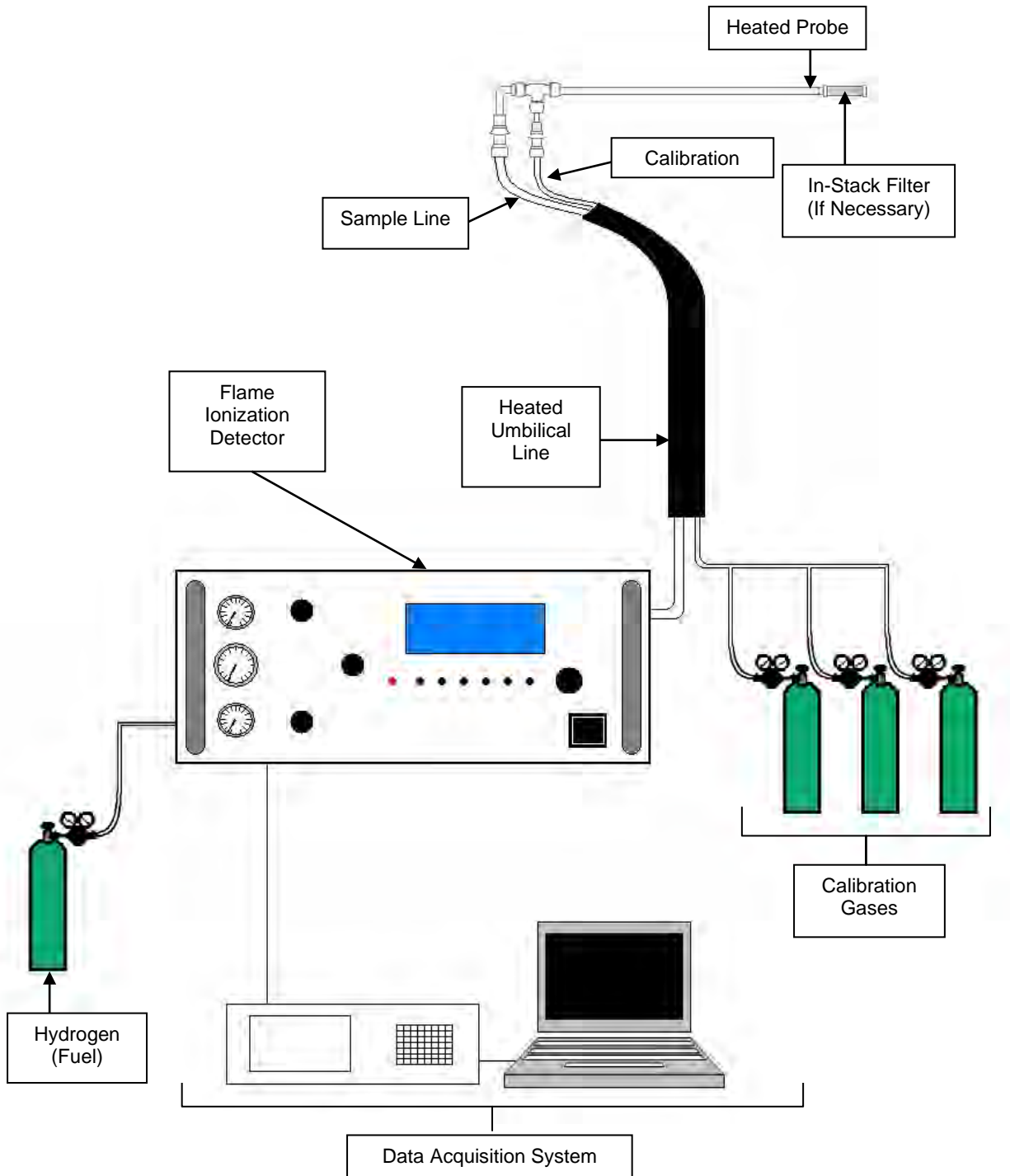




# USEPA Method 5/202- Filterable/Condensable Particulate Matter



# USEPA Method 25A – Total Gaseous Organic Compound Sample Train



## Appendix C - Calculation Nomenclature and Formulas

**Client:** PCC Structural  
**Facility:** Carson Facility  
**Project #:** M231408

**Location:** System 1 - Autoclave  
**Date:** 4/26/23

### Sample Calculations

$$(20.6 \text{ ppm} - -0.1 \text{ ppm}) \times \frac{\text{O2 \% (dry)} \quad 11.1 \text{ ppm}}{11.0 \text{ ppm} - -0.1 \text{ ppm}} = 20.70 \%$$

$$(0.2 \text{ ppm} - 0.0 \text{ ppm}) \times \frac{\text{CO2 \% (dry)} \quad 11.2 \text{ ppm}}{11.0 \text{ ppm} - 0.0 \text{ ppm}} = 0.20 \%$$

$$C_{\text{gas}} = (C - C_o) \times \frac{C_{\text{ma}}}{C_m - C_o}$$

where:

$C_{\text{gas}}$  = Effluent gas concentration, dry basis, ppm

$C$  = Average gas concentration indicated by gas analyzer, dry basis, ppm

$C_o$  = Average of initial and final system calibration bias check responses for the zero gas, ppm

$C_m$  = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm

$C_{\text{ma}}$  = Actual concentration of the upscale calibration gas, ppm

## Volumetric Flow Rate Example Calculations

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 1  
**Run:** Pre 1  
**Test Date:** 4/26/2023

### Moisture Content

$$Bws = \frac{e' - AP (t-t')}{P}$$

where:  $e'$  = saturated vapor pressure of water, in. Hg,  
at the wet bulb temperature,  $t'$

$$A = 3.67 \times 10^{-4} (1 + 0.00064 (t' - 32))$$

$P$  = absolute pressure, in. Hg, in the duct

$t$  = dry bulb temperature, °F

$t'$  = wet bulb temperature, °F

$$Bws = \underline{0.136}$$

$$BWS = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

where:  $V_{wc(std)}$  = Volume of condensed water vapor corrected to standard conditions

$V_{wsg(std)}$  = Volume of water vapor collected in silica gel,  
corrected to standard conditions

$V_{m(std)}$  = Dry gas volume measured by dry gas meter,  
corrected to standard conditions

$$Bws = \underline{0.136}$$

### Dry Molecular Weight

$$Md = \underline{28.90}$$

### Wet Molecular Weight

$$Ms = Md \times (1 - Bws) + (18.0 \times Bws)$$

$$Md = \underline{28.90} \quad Bws = \underline{0.136}$$

$$Ms = \underline{27.42}$$

### Average Duct Velocity

$$Vs = 85.49 \times Cp \times \text{Sqrt } \Delta P \text{ (avg)} \times (Ts \text{ (avg)} + 460 / (Ps \times Ms))^{1/2}$$

$$Cp = \frac{0.990}{25.35} \quad Ts \text{ (avg)} = \frac{25.3}{27.42} \quad \text{Sqrt } \Delta P \text{ avg: } \underline{0.387}$$

$$Vs = \underline{32.30}$$

### Volumetric Flow Rate

$$Q \text{ (Actual Basis)} = Vs \times A \times 60$$

$$Vs = \underline{32.30} \quad A = \underline{0.050}$$

$$Q = \underline{97} \text{ acfm}$$

$$Qs \text{ (Standard Basis)} = 17.647 \times Q \times \frac{Ps}{460 + Ts \text{ (avg)}}$$

$$Q = \underline{97} \quad Ps = \underline{25.35} \quad Ts \text{ (avg)} = \underline{25.3}$$

$$Qs = \underline{64} \text{ scfm}$$

$$Qs \text{ (Standard Basis)} = \text{scfm} \times 60 \text{ min/hr}$$

$$Qs = \underline{3845} \text{ scfh}$$

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Project #:** M231408

**Location:** System 2 - Mold Burnout  
**Date:** 4/25/23

### Sample Calculations

$$(23.6 \text{ ppm} - 0.1 \text{ ppm}) \times \frac{\text{NOx ppmvd} \quad 18.1 \text{ ppm}}{18.1 \text{ ppm} - 0.1 \text{ ppm}} = 23.6 \text{ ppm}$$

$$(12.9 \text{ ppm} - 0.1 \text{ ppm}) \times \frac{\text{O2 \% (dry)} \quad 11.1 \text{ ppm}}{10.9 \text{ ppm} - 0.1 \text{ ppm}} = 13.10 \%$$

$$(4.7 \text{ ppm} - 0.0 \text{ ppm}) \times \frac{\text{CO2 \% (dry)} \quad 11.2 \text{ ppm}}{11.1 \text{ ppm} - 0.0 \text{ ppm}} = 4.70 \%$$

$$(7.3 \text{ ppm} - 0.3 \text{ ppm}) \times \frac{\text{CO ppmvd} \quad 50.7 \text{ ppm}}{49.8 \text{ ppm} - 0.3 \text{ ppm}} = 7.2 \text{ ppm}$$

$$(0.1 \text{ ppm} - 0.1 \text{ ppm}) \times \frac{\text{SO2 ppmvd} \quad 20.0 \text{ ppm}}{20.3 \text{ ppm} - 0.1 \text{ ppm}} = 0.0 \text{ ppm}$$

$$C_{\text{gas}} = (C - C_o) \times \frac{C_{\text{ma}}}{C_m - C_o}$$

where:

$C_{\text{gas}}$  = Effluent gas concentration, dry basis, ppm

$C$  = Average gas concentration indicated by gas analyzer, dry basis, ppm

$C_o$  = Average of initial and final system calibration bias check responses for the zero gas, ppm

$C_m$  = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm

$C_{\text{ma}}$  = Actual concentration of the upscale calibration gas, ppm

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 2 - Mold Burnout  
 Run: 1  
 Date: 4/25/2023  
 Method: 5/202  
 Source Condition: Normal

**Dry Molecular Weight**

$$Md = 0.44 \times (\%CO_2) + 0.32 \times (\%O_2) + 0.28 \times \%N_2$$

$$\%CO_2 = \underline{4.7} \quad \%O_2 = \underline{13.1} \quad \%N_2 = \underline{82.2}$$

$$Md = \underline{29.276}$$

**Wet Molecular Weight**

$$Ms = Md \times (1 - Bws) + (18.0 \times Bws)$$

$$Md = \underline{29.276} \quad Bws = \underline{0.071}$$

$$Ms = \underline{28.470}$$

**Meter Volume at Standard Conditions**

$$Vm(std) = 17.647 \times Y \times Vm \times \frac{(Pbar + DH/13.6)}{Tm}$$

$$Y = \underline{0.999} \quad Vm = \underline{83.231} \quad Pbar = \underline{25.22}$$

$$DH = \underline{1.88} \quad Tm = \underline{513.7}$$

$$Vm(std) = \underline{72.426}$$

**Volume of Water Vapor Condensed**

$$Vw(std) = 0.0471 \times (\text{net H}_2\text{O gain})$$

$$\text{Net H}_2\text{O} = \underline{118.4}$$

$$Vw(std) = \underline{5.577}$$

**Moisture Content**

$$Bws = \frac{Vw(std)}{Vw(std) + Vm(std)}$$

$$Vw(std) = \underline{5.577} \quad Vm(std) = \underline{72.426}$$

$$Bws = \underline{0.071}$$

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 2 - Mold Burnout  
 Run: 1  
 Date: 4/25/2023  
 Method: 5/202  
 Source Condition: Normal

**Average Duct Velocity**

$$V_s = 85.49 \times C_p \times \sqrt{DP \text{ (avg)}} \times (T_s \text{ (avg)} + 460 / (P_s \times M_s))^{1/2}$$

$$C_p = \frac{0.840}{25.22} \quad T_s \text{ (avg)} = \frac{1211.4}{28.470} \quad \sqrt{DP \text{ (avg)}} = 0.325$$

$$V_s = 35.590$$

**Volumetric Flow Rate (Actual Basis)**

$$Q = V_s \times A \times 60$$

$$V_s = 35.590 \quad A = 4.000$$

$$Q = 8,542$$

**Volumetric Flow Rate (Standard Basis)**

$$Q_{std} = 17.647 \times Q \times \frac{P_s}{T_s \text{ (avg)} + 460}$$

$$Q = 8,542 \quad P_s = 25.22 \quad T_s \text{ (avg)} = 1211.4$$

$$Q_{std} = 2,274$$

**Volumetric Flow Rate (Standard Dry Basis)**

$$Q_{std(dry)} = Q_{std} \times (1 - B_{ws})$$

$$Q_{std} = 2,274 \quad B_{ws} = 0.071$$

$$Q_{std(dry)} = 2,112$$

**Isokinetic Variation:**

$$\%ISO = \frac{0.0945 \times (T_s + 460) \times V_m(std)}{V_s \times \theta \times A_n \times P_s \times (1 - B_{ws})}$$

$$T_s = \frac{1211.4}{0.0013364} \quad V_m(std) = \frac{72.426}{100} \quad V_s = \frac{35.590}{25.22}$$

$$B_{ws} = 0.071$$

$$\%ISO = 102.7$$



Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 2 - Mold Burnout  
 Run: 1  
 Date: 4/25/2023  
 Method: 5/202  
 Source Condition: Normal

**PM Concentration:**

This example represents the filterable fraction. For other fractions, use the obtained mn for that particulate fraction.

$$Co = \frac{m_n \times 15.43}{Vm(std)}$$

$$m_n (g) = \underline{0.00334} \quad Vm(std) = \underline{72.426}$$

$$Co = \underline{0.0007} \text{ gr/dscf}$$

**PM Emission Rate:**

$$\text{Emission Rate lb/hr} = \frac{Co}{7,000} \times Qstd(dry) \times 60$$

$$Co = \underline{0.0007} \quad Qstd(dry) = \underline{2,112}$$

$$\text{Emission Rate lb/hr} = \underline{0.013} \text{ lb/hr}$$

## Volumetric Flow Rate Example Calculations

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 1  
**Run:** Pre 1  
**Test Date:** 4/26/2023

### Moisture Content

$$Bws = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

where:  $V_{wc(std)}$  = Volume of condensed water vapor corrected to standard conditions  
 $V_{wsg(std)}$  = Volume of water vapor collected in silica gel, corrected to standard conditions  
 $V_{m(std)}$  = Dry gas volume measured by dry gas meter, corrected to standard conditions

**Bws = 0.136**

### Dry Molecular Weight

**Md = 28.90**

### Wet Molecular Weight

$$Ms = Md \times (1 - Bws) + (18.0 \times Bws)$$

Md = 28.90      Bws = 0.136

**Ms = 27.42**

### Average Duct Velocity

$$Vs = 85.49 \times Cp \times \text{Sqrt } \Delta P \text{ (avg)} \times (Ts \text{ (avg)} + 460 / (Ps \times Ms))^{1/2}$$

$Cp = \frac{0.990}{25.35}$        $Ts \text{ (avg)} = \frac{25.3}{27.42}$        $\text{Sqrt } \Delta P \text{ avg: } \frac{0.387}{27.42}$

**Vs = 32.30**

### Volumetric Flow Rate

$$Q \text{ (Actual Basis)} = Vs \times A \times 60$$

Vs = 32.30      A = 0.050

**Q = 97 acfm**

$$Qs \text{ (Standard Basis)} = 17.647 \times Q \times \frac{Ps}{460 + Ts \text{ (avg)}}$$

Q = 97      Ps = 25.35      Ts (avg) = 25.3

**Qs = 64 scfm**

$$Qs \text{ (Standard Basis)} = \text{scfm} \times 60 \text{ min/hr}$$

**Qs = 3845 scfh**

# MOSTARDI PLATT

## Volumetric Flow Nomenclature

- $A$  = Cross-sectional area of stack or duct,  $\text{ft}^2$
- $B_{ws}$  = Water vapor in gas stream, proportion by volume
- $C_p$  = Pitot tube coefficient, dimensionless
- $M_d$  = Dry molecular weight of gas,  $\text{lb/lb-mole}$
- $M_s$  = Molecular weight of gas, wet basis,  $\text{lb/lb-mole}$
- $M_w$  = Molecular weight of water,  $18.0 \text{ lb/lb-mole}$
- $P_{bar}$  = Barometric pressure at testing site, in. Hg
- $P_g$  = Static pressure of gas, in. Hg (in.  $\text{H}_2\text{O}/13.6$ )
- $P_s$  = Absolute pressure of gas, in. Hg =  $P_{bar} + P_g$
- $P_{std}$  = Standard absolute pressure,  $29.92 \text{ in. Hg}$
- $Q_{acfm}$  = Actual volumetric gas flow rate, acfm
- $Q_{sd}$  = Dry volumetric gas flow rate corrected to standard conditions, dscf/hr
- $R$  = Ideal gas constant,  $21.85 \text{ in. Hg-ft}^3/\text{°R-lb-mole}$
- $T_s$  = Absolute gas temperature,  $\text{°R}$
- $T_{std}$  = Standard absolute temperature,  $528\text{°R}$
- $v_s$  = Gas velocity,  $\text{ft/sec}$
- $V_{w(std)}$  = Volume of water vapor in gas sample, corrected to standard conditions, scf
- $Y$  = Dry gas meter calibration factor
- $\Delta p$  = Velocity head of gas, in.  $\text{H}_2\text{O}$
- $K_1$  =  $17.647 \text{ °R/in. Hg}$
- %EA = Percent excess air
- % $\text{CO}_2$  = Percent carbon dioxide by volume, dry basis
- % $\text{O}_2$  = Percent oxygen by volume, dry basis
- % $\text{N}_2$  = Percent nitrogen by volume, dry basis
- 0.264 = Ratio of  $\text{O}_2$  to  $\text{N}_2$  in air, v/v
- 0.28 = Molecular weight of  $\text{N}_2$  or  $\text{CO}$ , divided by 100
- 0.32 = Molecular weight of  $\text{O}_2$  divided by 100
- 0.44 = Molecular weight of  $\text{CO}_2$  divided by 100
- 13.6 = Specific gravity of mercury (Hg)

# MOSTARDI PLATT

## Volumetric Air Flow Calculations (Wet Bulb/ Dry Bulb)

$$Bws = \left[ \frac{e' - AP(t - t')}{P} \right]$$

$e'$  = saturated vapor pressure of water, in.Hg,

at the wet bulb temperature,  $t'$

$$A = 3.67 \times 10^{-4} [1 + 0.00064 (t' - 32)]$$

$P$  = pressure, inches mercury, in the duct

$t$  = dry bulb temperature, °F

$t'$  = wet bulb temperature, °F

$Bws$  = water vapor in gas stream proportion  
by volume

$$Md = (0.44 \times \%CO_2) + (0.32 \times \%O_2) + [0.28 \times (100 - \%CO_2 - \%O_2)]$$

$$MS = Md \times (1 - Bws) + (18 \times Bws)$$

$$Vs = \sqrt{\frac{(Ts + 460)}{Ms \times Ps}} \times \sqrt{DP} \times Cp \times 85.49$$

$$Acfm = Vs \times \text{Area (of stack or duct)} \times 60$$

$$Dscfm = Acfm \times 17.647 \times \left[ \frac{Ps}{(460 + Ts)} \right] \times (1 - Bws)$$

$$Scfm = Acfm \times 17.647 \times \left[ \frac{Ps}{(460 + Ts)} \right]$$

$$Scfh = Scfm \times 60 \frac{\text{min}}{\text{hr}}$$

acfm = actual cubic feet per minute  
dscfm = dry standard cubic feet per minute  
scfm = standard cubic feet per minute  
scfh = standard cubic feet per hour

$Cp$  = pitot tube correction factor  
 $Ps$  = absolute flue gas pressure  
 $Ms$  = molecular weight of gas (lb/lb mole)  
 $Md$  = dry molecular weight of gas (lb/lb mole)

# MOSTARDI PLATT

## Isokinetic Nomenclature

- A = Cross-sectional area of stack or duct, square feet
- $A_n$  = Cross-sectional area of nozzle, square feet
- $B_{ws}$  = Water vapor in gas stream, by volume
- $C_a$  = Acetone blank residue concentration, g/g
- $C_{acf}$  = Concentration of particulate matter in gas stream at actual conditions, gr/acf
- $C_p$  = Pitot tube coefficient
- $C_s$  = Concentration of particulate matter in gas stream, dry basis, corrected to standard conditions, gr/dscf
- IKV = Isokinetic sampling variance, must be  $90.0\% \leq IKV \leq 110.0\%$
- $M_d$  = Dry molecular weight of gas, lb/lb-mole
- $M_s$  = Molecular weight of gas, wet basis, lb/lb-mole
- $M_w$  = Molecular weight of water, 18.0 lb/lb-mole
- $m_a$  = Mass of residue of acetone after evaporation, grams
- $P_{bar}$  = Barometric pressure at testing site, inches mercury
- $P_g$  = Static pressure of gas, inches mercury (inches water/13.6)
- $P_s$  = Absolute pressure of gas, inches mercury =  $P_{bar} + P_g$
- $P_{std}$  = Standard absolute pressure, 29.92 inches mercury
- $Q_{acfm}$  = Actual volumetric gas flow rate, acfm
- $Q_{sd}$  = Dry volumetric gas flow rate corrected to standard conditions, dscfh
- R = Ideal gas constant, 21.85 inches mercury cubic foot/ $^{\circ}R$ -lb-mole
- $T_m$  = Dry gas meter temperature,  $^{\circ}R$
- $T_s$  = Gas temperature,  $^{\circ}R$
- $T_{std}$  = Absolute temperature, 528 $^{\circ}R$
- $V_a$  = Volume of acetone blank, ml
- $V_{aw}$  = Volume of acetone used in wash, ml
- $W_a$  = Weight of residue in acetone wash, grams
- $m_n$  = Total amount of particulate matter collected, grams
- $V_{1c}$  = Total volume of liquid collected in impingers and silica gel, ml
- $V_m$  = Volume of gas sample as measured by dry gas meter, dcf
- $V_{m(std)}$  = Volume of gas sample measured by dry gas meter, corrected to standard conditions, dscf
- $v_s$  = Gas velocity, ft/sec
- $V_{w(std)}$  = Volume of water vapor in gas sample, corrected to standard conditions, scf
- Y = Dry gas meter calibration factor
- $\Delta H$  = Average pressure differential across the orifice meter, inches water
- $\Delta p$  = Velocity head of gas, inches water
- $\rho_a$  = Density of acetone, 0.7855 g/ml (average)
- $\rho_w$  = Density of water, 0.002201 lb/ml
- $\theta$  = Total sampling time, minutes
- $K_1$  = 17.647  $^{\circ}R$ /in. Hg
- $K_2$  = 0.04707 ft<sup>3</sup>/ml
- $K_4$  = 0.09450/100 = 0.000945
- $K_p$  = Pitot tube constant,  $85.49 \frac{ft}{sec} \left[ \frac{(lb/lb-mole)(in. Hg)}{(^{\circ}R)(in. H_2O)} \right]^{1/2}$
- %EA = Percent excess air
- %CO<sub>2</sub> = Percent carbon dioxide by volume, dry basis
- %O<sub>2</sub> = Percent oxygen by volume, dry basis
- %CO = Percent carbon monoxide by volume, dry basis
- %N<sub>2</sub> = Percent nitrogen by volume, dry basis
- 0.264 = Ratio of O<sub>2</sub> to N<sub>2</sub> in air, v/v
- 28 = Molecular weight of N<sub>2</sub> or CO
- 32 = Molecular weight of O<sub>2</sub>
- 44 = Molecular weight of CO<sub>2</sub>
- 13.6 = Specific gravity of mercury (Hg)

## MOSTARDI PLATT

### Isokinetic Calculation Formulas

- $$1. V_{w(\text{std})} = V_{\text{Ic}} \left( \frac{\rho_w}{M_w} \right) \left( \frac{RT_{\text{std}}}{P_{\text{std}}} \right) = K_2 V_{\text{Ic}}$$
- $$2. V_{m(\text{std})} = V_m Y \left( \frac{T_{\text{std}}}{T_m} \right) \left( \frac{(P_{\text{bar}} + (\frac{\Delta H}{13.6}))}{P_{\text{std}}} \right) = K_1 V_m Y \frac{(P_{\text{bar}} + (\frac{\Delta H}{13.6}))}{T_m}$$
- $$3. B_{ws} = \frac{V_{w(\text{std})}}{(V_{m(\text{std})} + V_{w(\text{std})})}$$
- $$4. M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2)$$
- $$5. M_s = M_d(1 - B_{ws}) + 18.0(B_{ws})$$
- $$6. C_a = \frac{m_a}{V_a \rho_a}$$
- $$7. W_a = C_a V_{aw} \rho_a$$
- $$8. C_{\text{acf}} = 15.43 K_i \left( \frac{m_n P_s}{(V_{w(\text{std})} + V_{m(\text{std})}) T_s} \right)$$
- $$9. C_s = (15.43 \text{ grains/gram}) (m_n / V_{m(\text{std})})$$
- $$10. v_s = K_p C_p \sqrt{\frac{\Delta P T_s}{P_s M_s}}$$
- $$11. Q_{\text{acfm}} = v_s A (60_{\text{sec/min}})$$
- $$12. Q_{\text{sd}} = (3600_{\text{sec/hr}}) (1 - B_{ws}) v_s \left( \frac{T_{\text{std}} P_s}{T_s P_{\text{std}}} \right) A$$
- $$13. E \text{ (emission rate, lbs/hr)} = Q_{\text{sd}} (C_s / 7000 \text{ grains/lb})$$
- $$14. \text{IKV} = \frac{T_s V_{m(\text{std})} P_{\text{std}}}{T_{\text{std}} v_s \theta A_n P_s 60 (1 - B_{ws})} = K_4 \frac{T_s V_{m(\text{std})}}{P_s v_s A_n \theta (1 - B_{ws})}$$
- $$15. \%EA = \left( \frac{\%O_2 - (0.5 \%CO)}{0.264 \%N_2 - (\%O_2 - 0.5 \%CO)} \right) \times 100$$

# MOSTARDI PLATT

## ppm Conversion Calculations and Factors

### ppm to lbs/scf

$$(\text{ppm } X) \times (\text{conversion factor } X) = X \text{ lbs/scf}$$

### lbs/scf to lbs/hr

Dry ppm's with dry flow, and wet ppm's with wet flow.

$$(X \text{ lbs/scf}) \times (\text{airflow scf/min}) \times (60 \text{ min/hr}) = X \text{ lbs/hr}$$

### lbs/scf to lbs/mmBtu

Dry ppm's with dry diluent, and wet ppm's with wet diluent.

$$\text{CO}_2 - (X \text{ lbs/scf}) \times (F_c) \times (100/\text{CO}_2) = X \text{ lbs/mmBtu}$$

$$\text{O}_2 - (X \text{ lbs/scf}) \times (F_d) \times (20.9/(20.9-\text{O}_2)) = X \text{ lbs/mmBtu}$$

### Conversion Factors

$$\text{NO}_x - 1.19396 \times 10^{-7}$$

$$\text{SO}_2 - 1.6625 \times 10^{-7}$$

$$\text{CO} - 7.2664 \times 10^{-8}$$

$$\text{CH}_4 - 4.1637 \times 10^{-8}$$

$$\text{C}_3\text{H}_8 - 1.1419 \times 10^{-7}$$

# MOSTARDI PLATT

## Moisture Calculations

$$V_{wc(std)} = \frac{(V_f - V_i)\rho_w RT_{std}}{P_{std}M_w} = 0.04707(V_f - V_i)$$

$$V_{wsg(std)} = \frac{(W_f - W_i)\rho_w RT_{std}}{P_{std}M_w} = 0.04715(W_f - W_i)$$

$$V_{m(std)} = 17.64 V_m Y \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

Where:

$B_{ws}$  = Water vapor in gas stream, proportion by volume

$M_w$  = Molecular weight of water, 18.015 lb/lb-mole

$P_{bar}$  = Barometric pressure at the testing site, in. Hg

$P_{std}$  = Standard absolute pressure, 29.92 in. Hg

$R$  = Ideal gas constant,  $0.048137 \text{ (in. Hg)(ft}^3\text{)/(g-mole)(}^\circ\text{R)} =$   
 $[21.8348 \text{ (in. Hg)(ft}^3\text{)/(lb-mole)(}^\circ\text{R)}]/453.592 \text{ g-mole/lb-mole}$

$T_m$  = Absolute average dry gas meter temperature,  $^\circ\text{R}$

$T_{std}$  = Standard absolute temperature, 528  $^\circ\text{R}$

$V_f$  = Final volume of condenser water, ml

$V_i$  = Initial volume of condenser water, ml

$V_m$  = Dry gas volume measured by dry gas meter, dcf

$V_{m(std)}$  = Dry gas volume measured by dry gas meter, corrected to standard conditions, scf

$V_{wc(std)}$  = Volume of condensed water vapor, corrected to standard conditions, scf

$V_{wsg(std)}$  = Volume of water vapor collected in silica gel, corrected to standard conditions, scf

$W_f$  = Final weight of silica gel, g

$W_i$  = Initial weight of silica gel, g

$Y$  = Dry gas meter calibration factor

$\Delta H$  = Average pressure exerted on dry gas meter outlet by gas sample bag, in.  $\text{H}_2\text{O}$

$\rho_w$  = Density of water, 0.9982 g/ml

13.6 = Specific gravity of mercury (Hg)

17.64 =  $T_{std}/P_{std}$

0.04707 =  $\text{ft}^3/\text{ml}$                       0.04715 =  $\text{ft}^3/\text{g}$



# MOSTARDI PLATT

## Derivation of Factors Used in Sulfur Dioxide and Nitrogen Oxides Calculations

Factors for calculating concentration as pounds per dry standard cubic feet:

$$\begin{aligned} \text{Factor for } C_{\text{SO}_2} &= \frac{64.0628 \text{ grams/gram - mole}}{2 \frac{\text{gram - equivalents}}{\text{gram - mole}} \times 1000 \frac{\text{gram - milliequivalents}}{\text{gram - equivalent}} \times 453.592 \frac{\text{grams}}{\text{lb}}} \\ &= 7.061721 \times 10^{-5} \text{ lb/g - meq} \quad \text{Use } 7.0617 \times 10^{-5} \end{aligned}$$

$$\text{Factor for } C_{\text{NO}_2} \text{ as NO}_2 = \frac{28316.846 \text{ ml/scf}}{4.53592 \times 10^8 \frac{\mu\text{g}}{\text{lb}}} = 6.242801 \times 10^{-5} \frac{\text{lb/scf}}{\mu\text{g/ml}} \quad \text{Use } 6.2428 \times 10^{-5}$$

Factors for calculating from parts per million to lb/dscf:

Using 22.414 liters of gas per gram-mole at 0°C and 1 atmosphere pressure,

One pound-mole of gas is contained in 359.04765 ft<sup>3</sup> at 32°F and 29.92 in. Hg, or 385.31943 ft<sup>3</sup> at 68°F and 29.92 in. Hg

$$\text{ppm} \times \frac{\text{Mw lb/lb-mole}}{385.31943 \text{ dscf/lb-mole} \times 10^6} = \text{lb/dscf}$$

Where

Mw = pollutant molecular weight

SO<sub>2</sub> = 64.0628 lb/lb-mole

NO<sub>2</sub> = 46.0055 lb/lb-mole

$$\text{Factor for ppm SO}_2 = \frac{1}{64.06 \times 2.5952 \times 10^{-9}} = 6.0151 \times 10^6 \text{ dscf/lb}$$

Use 6.0151 × 10<sup>6</sup>

$$\text{Factor for ppm NO}_x = \frac{1}{46.0055 \times 2.5952494 \times 10^{-9}} = 8.3755 \times 10^6 \text{ dscf/lb}$$

Use 8.3755 × 10<sup>6</sup>

# MOSTARDI PLATT

## Derivation of Factors Used In Carbon Monoxide Calculations

Factors for calculating concentration as pounds per dry standard cubic feet:

$$\begin{aligned} \text{Factor for } C_{\text{CO}} &= \frac{28.01 \text{ grams/gram - mole}}{2 \frac{\text{gram - equivalents}}{\text{gram - mole}} \times 1000 \frac{\text{gram - milliequivalents}}{\text{gram - equivalent}} \times 453.592 \frac{\text{grams}}{\text{lb}}} \\ &= 3.087577 \times 10^{-5} \text{ lb/g - meq} \quad \text{Use } 3.0876 \times 10^{-5} \end{aligned}$$

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Factors for calculating from lb/dscf to parts per million:

Using 22.414 liters of gas per gram-mole at 0°C and 1 atmosphere pressure,

One pound-mole of gas is contained in 359.04765 ft<sup>3</sup> at 32°F and 29.92 in. Hg, or 385.31943 ft<sup>3</sup> at 68°F and 29.92 in. Hg

$$\text{ppm} = \frac{M \text{ lb/lb-mole}}{385.31943 \text{ dscf/lb-mole} \times 10^6} = 2.5952494 \times 10^{-9} M \text{ lb/dscf}$$

Where M = pollutant molecular weight; CO = 28.01 lb/lb-mole

$$\text{Factor for ppm CO} = \frac{1}{28.01 \times 2.5952 \times 10^{-9}} = 1.3762 \times 10^7 \text{ dscf/lb}$$

## Appendix D - Laboratory Sample Analysis

Client: PCC Structurals  
 Facility: Carson City Facility  
 Project Number: M231408  
 Test Location: System 2 - Mold Burnout  
 Test Method: 5/202  
 Filterable Analysis Date: 5/10/2023  
 Condensable Analysis Date: 5/10/2023

Filter Drying Temp °F: 220  
 Analyst: TWM  
 Analyst: TWM

Description	Sample Date	ID#	vol. (ml)	Initial Weight (grams)	Final Weight (grams)	Net Weight Gain (grams)
<b>Filterable Particulate</b>						
Run 1	4/25/2023					
Source Condition: Normal						
M5 Filter		6538		0.46963	0.47061	0.00098
Acetone Wash (M5 Pans)		6708	80 mL	4.95054	4.95327	0.00273
Acetone Blank						0.00037
Total Filterable Weight						0.00334
<b>Condensable Particulate</b>						
Acetone/Hexane Wash		6660	185 mL	21.06682	21.06773	0.00091
DI Wash		6663	265 mL	21.27373	21.27670	0.00297
Field Blank						0.00182
Total Condensable Weight						<b>0.00206</b>
Total Particulate Weight						<b>0.00540</b>
<b>Filterable Particulate</b>						
Run 2	4/25/2023					
Source Condition: Normal						
M5 Filter		6539		0.46294	0.46394	0.00100
Acetone Wash (M5 Pans)		6709	75 mL	4.97720	4.98032	0.00312
Acetone Blank						0.00035
Total Filterable Weight						0.00377
<b>Condensable Particulate</b>						
Acetone/Hexane Wash		6661	195 mL	21.06321	21.06469	0.00148
DI Wash		6664	245 mL	21.31205	21.31492	0.00287
Field Blank						0.00182
Total Condensable Weight						<b>0.00253</b>
Total Particulate Weight						<b>0.00630</b>
<b>Filterable Particulate</b>						
Run 3	4/25/2023					
Source Condition: Normal						
M5 Filter		6556		0.46666	0.46687	0.00021
Acetone Wash (M5 Pans)		6710	75 mL	4.96976	4.97174	0.00198
Acetone Blank						0.00035
Total Filterable Weight						0.00184
<b>Condensable Particulate</b>						
Acetone/Hexane Wash		6662	190 mL	21.25033	21.25444	0.00411
DI Wash		6665	275 mL	21.29404	21.29600	0.00196
Field Blank						0.00182
Total Condensable Weight						<b>0.00425</b>
Total Particulate Weight						<b>0.00609</b>
<b>Field Train Blank Summary</b>						
Acetone/Hexane Wash		6680	95 mL	21.17322	21.17403	0.00081
DI Wash		6679	150 mL	21.06559	21.06660	0.00101
Total Field Train Blank						0.00182
<b>Reagent Blank Summary</b>						
DI Wash		6667	100 mL	21.05731	21.05742	≤ 0.00025
Hexane Wash		6668	100 mL	21.12544	21.12563	≤ 0.00025
Acetone Wash (M5 Pans)		6727	100 mL	4.97722	4.97768	0.00046
<b>RDL/MDL Summary</b>						
<b>Media</b>		<b>MDL, grams</b>		<b>RDL, grams</b>		
M5 Filter		0.00005		0.00015		
Acetone Wash (M5 Pans)		0.00008		0.00025		
Sample Vials (M202)		0.00008		0.00025		

Client: PCC Structurals  
 Facility: Carson City Facility  
 Project Number: M231408  
 Test Location: System 3 - Air Furnaces  
 Test Method: 5/202  
 Filterable Analysis Date: 5/10/2023  
 Condensable Analysis Date: 5/10/2023

Filter Drying Temp °F: 220  
 Analyst: TWM  
 Analyst: TWM

Description	Sample Date	ID#	vol. (ml)	Initial Weight (grams)	Final Weight (grams)	Net Weight Gain (grams)
<b>Filterable Particulate</b>						
Run 1	4/25/2023					
Source Condition: Normal						
M5 Filter		6781		0.46808	0.47921	0.01113
Acetone Wash (M5 Pans)		6715	60 mL	4.98983	4.99374	0.00391
Acetone Blank						0.00028
Total Filterable Weight						0.01476
<b>Condensable Particulate</b>						
Acetone/Hexane Wash		6669	210 mL	21.21718	21.21900	0.00182
DI Wash		6606	215 mL	21.35454	21.35619	0.00165
Field Blank						0.00182
Total Condensable Weight						<b>0.00165</b>
Total Particulate Weight						<b>0.01641</b>
<b>Filterable Particulate</b>						
Run 2	4/25/2023					
Source Condition: Normal						
M5 Filter		6780		0.46824	0.48180	0.01356
Acetone Wash (M5 Pans)		6719	55 mL	4.96550	4.96736	0.00186
Acetone Blank						0.00025
Total Filterable Weight						0.01517
<b>Condensable Particulate</b>						
Acetone/Hexane Wash		6670	190 mL	21.32432	21.32580	0.00148
DI Wash		6607	225 mL	21.33283	21.33444	0.00161
Field Blank						0.00182
Total Condensable Weight						<b>0.00127</b>
Total Particulate Weight						<b>0.01644</b>
<b>Filterable Particulate</b>						
Run 3	4/25/2023					
Source Condition: Normal						
M5 Filter		6782		0.46946	0.48255	0.01309
Acetone Wash (M5 Pans)		6711	55 mL	4.97034	4.97152	0.00118
Acetone Blank						0.00025
Total Filterable Weight						0.01402
<b>Condensable Particulate</b>						
Acetone/Hexane Wash		6671	195 mL	21.02220	21.02347	0.00127
DI Wash		6608	230 mL	21.33098	21.33256	0.00158
Field Blank						0.00182
Total Condensable Weight						<b>0.00103</b>
Total Particulate Weight						<b>0.01505</b>
<b>Field Train Blank Summary</b>						
Acetone/Hexane Wash		6680	95 mL	21.17322	21.17403	0.00081
DI Wash		6679	150 mL	21.06559	21.06660	0.00101
Total Field Train Blank						0.00182
<b>Field Proof Blank Summary</b>						
<b>Reagent Blank Summary</b>						
DI Wash		6667	100 mL	21.05731	21.05742	≤ 0.00025
Hexane Wash		6668	100 mL	21.12544	21.12563	≤ 0.00025
Acetone Wash (M5 Pans)		6727	100 mL	4.97722	4.97768	0.00046
<b>RDL/MDL Summary</b>						
<b>Media</b>				<b>MDL, grams</b>		<b>RDL, grams</b>
M5 Filter				0.00005		0.00015
Acetone Wash (M5 Pans)				0.00008		0.00025
Sample Vials (M202)				0.00008		0.00025

**Client:** PCC Structural  
**Facility:** Carson City Facility  
**Project Number:** M231408  
**Test Location:** System 4  
**Test Method:** 5  
**Filterable Analysis Date:** 5/10/2023

**Filter Drying Temp °F:** 220  
**Analyst:**

Description	Sample Date	ID#	vol. (ml)	Initial Weight (grams)	Final Weight (grams)	Net Weight Gain (grams)
<b>Filterable Particulate</b>						
Run 1	4/26/2023					
Source Condition:	Normal					
M5 Filter		6554		0.46788	0.47661	0.00873
Acetone Wash (M5 Pans)		6724	60 mL	4.94326	4.94653	0.00327
Acetone Blank						0.00028
Total Filterable Weight						0.01172
<b>Filterable Particulate</b>						
Run 2	4/26/2023					
Source Condition:	Normal					
M5 Filter		6779		0.46811	0.47151	0.00340
Acetone Wash (M5 Pans)		6725	65 mL	4.94466	4.94788	0.00322
Acetone Blank						0.00030
Total Filterable Weight						0.00632
<b>Filterable Particulate</b>						
Run 3	4/26/2023					
Source Condition:	Normal					
M5 Filter		6563		0.46605	0.46647	0.00042
Acetone Wash (M5 Pans)		6726	75 mL	4.94671	4.95093	0.00422
Acetone Blank						0.00035
Total Filterable Weight						0.00429
<b>Reagent Blank Summary</b>						
Acetone Wash (M5 Pans)		6727	100 mL	4.97722	4.97768	0.00046
<b>RDL/MDL Summary</b>						
<b>Media</b>	<b>MDL, grams</b>			<b>RDL, grams</b>		
M5 Filter	0.00005			0.00015		
Acetone Wash (M5 Pans)	0.00008			0.00025		
Sample Vials (M202)	0.00008			0.00025		

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Project Number:** M231408  
**Test Location:** System 5  
**Test Method:** 5  
**Filterable Analysis Date:** 5/10/2023

**Filter Drying Temp °F:** 220  
**Analyst:** TWM

Description	Sample Date	ID#	vol. (ml)	Initial Weight (grams)	Final Weight (grams)	Net Weight Gain (grams)
<b>Filterable Particulate</b>						
Run 1	4/27/2023					
Source Condition:	Normal					
M5 Filter		6555		0.46347	0.46585	0.00238
Acetone Wash (M5 Pans)		6712	55 mL	4.97665	4.98338	0.00673
Acetone Blank						0.00025
Total Filterable Weight						0.00886
<b>Filterable Particulate</b>						
Run 2	4/27/2023					
Source Condition:	Normal					
M5 Filter		8385		0.44546	0.44788	0.00242
Acetone Wash (M5 Pans)		6713	60 mL	4.97791	4.98095	0.00304
Acetone Blank						0.00028
Total Filterable Weight						0.00518
<b>Filterable Particulate</b>						
Run 3	4/27/2023					
Source Condition:	Normal					
M5 Filter		8373		0.44560	0.44683	0.00123
Acetone Wash (M5 Pans)		6714	70 mL	4.97741	4.98036	0.00295
Acetone Blank						0.00032
Total Filterable Weight						0.00386
<b>Reagent Blank Summary</b>						
Acetone Wash (M5 Pans)		6727	100 mL	4.97722	4.97768	0.00046
<b>RDL/MDL Summary</b>						
<b>Media</b>	<b>MDL, grams</b>			<b>RDL, grams</b>		
M5 Filter	0.00005			0.00015		
Acetone Wash (M5 Pans)	0.00008			0.00025		
Sample Vials (M202)	0.00008			0.00025		

**Client:** PCC Structural  
**Facility:** Carson City Facility  
**Project Number:** M231408  
**Test Location:** System 7  
**Test Method:** 5/202  
**Filterable Analysis Date:** 5/10/2023

**Filter Drying Temp °F:** 220  
**Analyst:** TWM

Description	Sample Date	ID#	vol. (ml)	Initial Weight (grams)	Final Weight (grams)	Net Weight Gain (grams)
<b>Filterable Particulate</b>						
Run 1	4/27/2023					
Source Condition:	Normal					
M5 Filter		8386		0.44483	0.46147	0.01664
Acetone Wash (M5 Pans)		6716	85 mL	4.97602	4.99159	0.01557
Acetone Blank						0.00039
Total Filterable Weight						0.03182
<b>Filterable Particulate</b>						
Run 2	4/27/2023					
Source Condition:	Normal					
M5 Filter		8375		0.44624	0.44684	0.00060
Acetone Wash (M5 Pans)		6717	80 mL	4.99247	4.99397	0.00150
Acetone Blank						0.00037
Total Filterable Weight						0.00173
<b>Filterable Particulate</b>						
Run 3	4/27/2023					
Source Condition:	Normal					
M5 Filter		8372		0.44053	0.44100	0.00047
Acetone Wash (M5 Pans)		6718	80 mL	4.99458	4.99603	0.00145
Acetone Blank						0.00037
Total Filterable Weight						0.00155
<b>Reagent Blank Summary</b>						
Acetone Wash (M5 Pans)		6727	100 mL	4.97722	4.97768	0.00046
<b>RDL/MDL Summary</b>						
<b>Media</b>	<b>MDL, grams</b>			<b>RDL, grams</b>		
M5 Filter	0.00005			0.00015		
Acetone Wash (M5 Pans)	0.00008			0.00025		
Sample Vials (M202)	0.00008			0.00025		



**Client:** PCC Structural  
**Facility:** Carson City Facility  
**Project Number:** M231408  
**Test Location:** System 9  
**Test Method:** 5/202  
**Filterable Analysis Date:** 5/10/2023

**Filter Drying Temp °F:** 220  
**Analyst:** TWM

Description	Sample Date	ID#	vol. (ml)	Initial Weight (grams)	Final Weight (grams)	Net Weight Gain (grams)
<b>Filterable Particulate</b>						
Run 1	4/26/2023					
Source Condition:	Normal					
M5 Filter		6769		0.46865	0.59536	0.12671
Acetone Wash (M5 Pans)		4700	70 mL	4.98962	5.07005	0.08043
Acetone Blank						0.00032
Total Filterable Weight						0.20682
<b>Filterable Particulate</b>						
Run 2	4/26/2023					
Source Condition:	Normal					
M5 Filter		6761		0.46629	0.58115	0.11486
Acetone Wash (M5 Pans)		4701	80 mL	4.95623	5.01737	0.06114
Acetone Blank						0.00037
Total Filterable Weight						0.17563
<b>Filterable Particulate</b>						
Run 3	4/26/2023					
Source Condition:	Normal					
M5 Filter		6773		0.46592	0.53638	0.07046
Acetone Wash (M5 Pans)		4702	85 mL	4.95399	5.00549	0.05150
Acetone Blank						0.00039
Total Filterable Weight						0.12157
<b>Reagent Blank Summary</b>						
Acetone Wash (M5 Pans)		6727	100 mL	4.97722	4.97768	0.00046
<b>RDL/MDL Summary</b>						
<b>Media</b>		<b>MDL, grams</b>			<b>RDL, grams</b>	
M5 Filter		0.00005			0.00015	
Acetone Wash (M5 Pans)		0.00008			0.00025	
Sample Vials (M202)		0.00008			0.00025	

## Appendix E - Reference Method Test Data

<b>Client:</b>	PCC Structurals	
<b>Facility:</b>	Carson City Facility	
<b>Test Location:</b>	System 1	
<b>Project #:</b>	M231408	
<b>Test Method:</b>	2	
<b>Test Engineer:</b>	Rods	
<b>Test Technician:</b>	AMS	
<b>Temp ID:</b>	CM45	
<b>Meter ID:</b>	CM45	
<b>Pitot ID:</b>	Standard	
<b>Pitot Type:</b>	Standard	
<b>Pitot Tube Coefficient:</b>	0.99	
<b>Probe Length:</b>	1.0	ft
<b>Sample Plane:</b>	Horizontal	
<b>Port Length:</b>	3.00	in.
<b>Port Size (diameter):</b>	2.00	in.
<b>Port Type:</b>	Nipple	
<b>Duct Shape:</b>	Circular	
<b>Diameter:</b>	0.25	ft
<b>Duct Area:</b>	0.05	Sq. Ft.
<b>Upstream Diameters:</b>	18.000	
<b>Downstream Diameters:</b>	15.000	
<b>Number of Ports Sampled:</b>	2	
<b>Number of Points per Port:</b>	8	
<b>Total Number of Traverse Points:</b>	16	
<b>Operating Level:</b>	Normal	
<b>Point Markings (including port length):</b>	<b>Point #</b>	<b>Inches</b>
	1	3.096
	2	3.315
	3	3.582
	4	3.969
	5	5.031
	6	5.418
	7	5.685
	8	5.904

**Method 1 and 2 Cyclonic Flow Check Data**

**Project Number** M231408  
**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Location:** System 1  
**Pitot ID:** Standard  
**Pitot Coefficient:** 0.990  
**Probe Length:** 1

**Source Condition:** Normal  
**Run No.:** 1  
**Date:** 4/26/2023  
**Start Time:** 6:25  
**End Time:** 6:40  
**RM Testers:** Rods/AMS  
**Port Length:** 3.00

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)
A	1	0.10	0.3162	215.0	0.0	26.38	B	1	0.09	0.3000	215.0	0.0	25.02
A	2	0.10	0.3162	215.0	1.0	26.38	B	2	0.12	0.3464	215.0	0.0	28.89
A	3	0.11	0.3317	216.0	0.0	27.68	B	3	0.11	0.3317	216.0	1.0	27.68
A	4	0.15	0.3873	217.0	0.0	32.35	B	4	0.15	0.3873	216.0	2.0	32.33
A	5	0.17	0.4123	217.0	2.0	34.44	B	5	0.17	0.4123	216.0	1.0	34.42
A	6	0.19	0.4359	217.0	0.0	36.41	B	6	0.17	0.4123	217.0	0.0	34.44
A	7	0.20	0.4472	217.0	1.0	37.36	B	7	0.19	0.4359	217.0	2.0	36.41
A	8	0.21	0.4583	217.0	2.0	38.28	B	8	0.21	0.4583	217.0	3.0	38.28

Average Yaw Angle      0.9 °

## METHOD 2 VOLUMETRIC FLOW DATA

<b>Project Number:</b>	M231408	<b>Operating Level:</b>	Normal
<b>Client:</b>	PCC Structurals	<b>Run No.:</b>	Pre 1
<b>Facility:</b>	Carson City Facility	<b>Test Date:</b>	4/26/2023
<b>Test Location:</b>	System 1	<b>Start Time:</b>	6:25
<b>Pitot ID:</b>	Standard	<b>End Time:</b>	6:40
<b>Pitot Coefficient:</b>	0.990	<b>Test Engineer:</b>	Rods
<b>Probe Length, Feet:</b>	1	<b>Test Tech:</b>	AMS
		<b>Port Length, Inches:</b>	3

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Velocity (V)
A	1	0.10	0.3162	215.0	26.38	B	1	0.09	0.3000	215.0	25.02
A	2	0.10	0.3162	215.0	26.38	B	2	0.12	0.3464	215.0	28.89
A	3	0.11	0.3317	216.0	27.68	B	3	0.11	0.3317	216.0	27.68
A	4	0.15	0.3873	217.0	32.35	B	4	0.15	0.3873	216.0	32.33
A	5	0.17	0.4123	217.0	34.44	B	5	0.17	0.4123	216.0	34.42
A	6	0.19	0.4359	217.0	36.41	B	6	0.17	0.4123	217.0	34.44
A	7	0.20	0.4472	217.0	37.36	B	7	0.19	0.4359	217.0	36.41
A	8	0.21	0.4583	217.0	38.28	B	8	0.21	0.4583	217.0	38.28

### Test Parameters

P <sub>bar</sub> - Barometric pressure, inches Hg	25.34	% CO <sub>2</sub>	0.50
P <sub>g</sub> - Stack Pressure, inches of H <sub>2</sub> O	0.10	% O <sub>2</sub>	20.50
P <sub>s</sub> - Absolute stack pressure, inches Hg	25.35	% N <sub>2</sub>	79.00
t <sub>s</sub> - Average stack temperature, °F	216.3	Md - dry basis lb/lb mole	28.90
Duct Shape:	Circular	Ms - wet basis lb/lb mole	27.418
Diameter, Feet	0.25		

Cross Sectional Area of Stack, Ft<sup>2</sup>

0.05

### Bws - Moisture content fraction

0.136

Moisture determined by wb/db?

N

### Method 2 Results

Average DP	0.1525	Q - ACFM	97
Average Sqrt DP	0.3868	Qsd - DSCFM	55
Average Velocity V <sub>s</sub> (ft/sec)	32.295	Qs - SCFM	64
		Qs - SCFH	3,845

**METHOD 2 VOLUMETRIC FLOW DATA**

<b>Project Number:</b>	M231408	<b>Operating Level:</b>	Normal
<b>Client:</b>	PCC Structurals	<b>Run No.:</b>	Post 1/Pre 2
<b>Facility:</b>	Carson City Facility	<b>Test Date:</b>	4/26/2023
<b>Test Location:</b>	System 1	<b>Start Time:</b>	7:46
<b>Pitot ID:</b>	Standard	<b>End Time:</b>	7:49
<b>Pitot Coefficient:</b>	0.990	<b>Test Engineer:</b>	Rods
<b>Probe Length, Feet:</b>	1	<b>Test Tech:</b>	AMS
		<b>Port Length, Inches:</b>	3

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Velocity (V)
A	1	0.05	0.2236	214.0	18.64	B	1	0.04	0.2000	214.0	16.67
A	2	0.05	0.2236	214.0	18.64	B	2	0.05	0.2236	214.0	18.64
A	3	0.07	0.2646	215.0	22.07	B	3	0.05	0.2236	214.0	18.64
A	4	0.07	0.2646	214.0	22.05	B	4	0.05	0.2236	214.0	18.64
A	5	0.08	0.2828	214.0	23.58	B	5	0.06	0.2449	215.0	20.43
A	6	0.07	0.2646	214.0	22.05	B	6	0.07	0.2646	215.0	22.07
A	7	0.08	0.2828	214.0	23.58	B	7	0.08	0.2828	215.0	23.60
A	8	0.09	0.3000	214.0	25.01	B	8	0.08	0.2828	215.0	23.60

**Test Parameters**

P <sub>bar</sub> - Barometric pressure, inches Hg	25.34	% CO <sub>2</sub>	0.50
P <sub>g</sub> - Stack Pressure, inches of H <sub>2</sub> O	0.01	% O <sub>2</sub>	20.50
P <sub>s</sub> - Absolute stack pressure, inches Hg	25.34	% N <sub>2</sub>	79.00
t <sub>s</sub> - Average stack temperature, °F	214.3	Md - dry basis lb/lb mole	28.90
Duct Shape:	Circular	Ms - wet basis lb/lb mole	27.418
Diameter, Feet	0.25		

Cross Sectional Area of Stack, Ft<sup>2</sup>

0.05

**Bws - Moisture content fraction**

**0.136**

Moisture determined by wb/db?

N

**Method 2 Results**

Average DP	0.0650	Q - ACFM	63
Average Sqrt DP	0.2533	Qsd - DSCFM	36
Average Velocity Vs (ft/sec)	21.119	Qs - SCFM	42
		Qs - SCFH	2,521

**METHOD 2 VOLUMETRIC FLOW DATA**

<b>Project Number:</b>	M231408	<b>Operating Level:</b>	Normal
<b>Client:</b>	PCC Structurals	<b>Run No.:</b>	Post 2/Pre 3
<b>Facility:</b>	Carson City Facility	<b>Test Date:</b>	4/26/2023
<b>Test Location:</b>	System 1	<b>Start Time:</b>	9:01
<b>Pitot ID:</b>	Standard	<b>End Time:</b>	9:14
<b>Pitot Coefficient:</b>	0.990	<b>Test Engineer:</b>	Rods
<b>Probe Length, Feet:</b>	1	<b>Test Tech:</b>	AMS
		<b>Port Length, Inches:</b>	3

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Velocity (V)
A	1	0.10	0.3162	214.0	26.31	B	1	0.11	0.3317	214.0	27.59
A	2	0.10	0.3162	214.0	26.31	B	2	0.13	0.3606	214.0	30.00
A	3	0.11	0.3317	214.0	27.59	B	3	0.15	0.3873	214.0	32.22
A	4	0.12	0.3464	215.0	28.84	B	4	0.14	0.3742	214.0	31.13
A	5	0.14	0.3742	215.0	31.15	B	5	0.14	0.3742	215.0	31.15
A	6	0.14	0.3742	216.0	31.18	B	6	0.14	0.3742	215.0	31.15
A	7	0.15	0.3873	217.0	32.29	B	7	0.13	0.3606	216.0	30.04
A	8	0.15	0.3873	217.0	32.29	B	8	0.14	0.3742	216.0	31.18

**Test Parameters**

P <sub>bar</sub> - Barometric pressure, inches Hg	25.34	% CO <sub>2</sub>	0.50
P <sub>g</sub> - Stack Pressure, inches of H <sub>2</sub> O	0.10	% O <sub>2</sub>	20.50
P <sub>s</sub> - Absolute stack pressure, inches Hg	25.35	% N <sub>2</sub>	79.00
t <sub>s</sub> - Average stack temperature, °F	215.0	Md - dry basis lb/lb mole	28.90
Duct Shape:	Circular	Ms - wet basis lb/lb mole	27.516
Diameter, Feet	0.25		

Cross Sectional Area of Stack, Ft<sup>2</sup>

0.05

**Bws - Moisture content fraction**

**0.127**

Moisture determined by wb/db?

N

**Method 2 Results**

Average DP	0.1306	Q - ACFM	90
Average Sqrt DP	0.3606	Qsd - DSCFM	52
Average Velocity Vs (ft/sec)	30.027	Qs - SCFM	60
		Qs - SCFH	3,582

METHOD 2 VOLUMETRIC FLOW DATA

<b>Project Number:</b>	M231408	<b>Operating Level:</b>	Normal
<b>Client:</b>	PCC Structurals	<b>Run No.:</b>	Post 3
<b>Facility:</b>	Carson City Facility	<b>Test Date:</b>	4/26/2023
<b>Test Location:</b>	System 1	<b>Start Time:</b>	10:16
<b>Pitot ID:</b>	Standard	<b>End Time:</b>	10:30
<b>Pitot Coefficient:</b>	0.990	<b>Test Engineer:</b>	Rods
<b>Probe Length, Feet:</b>	1	<b>Port Length, Inches:</b>	3
		<b>Test Tech:</b>	AMS

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Velocity (V)
A	1	0.08	0.2828	212.0	23.49	B	1	0.07	0.2646	212.0	21.98
A	2	0.08	0.2828	212.0	23.49	B	2	0.08	0.2828	212.0	23.49
A	3	0.08	0.2828	212.0	23.49	B	3	0.07	0.2646	212.0	21.98
A	4	0.09	0.3000	212.0	24.92	B	4	0.07	0.2646	212.0	21.98
A	5	0.10	0.3162	212.0	26.27	B	5	0.09	0.3000	212.0	24.92
A	6	0.10	0.3162	213.0	26.29	B	6	0.11	0.3317	213.0	27.57
A	7	0.10	0.3162	214.0	26.30	B	7	0.12	0.3464	213.0	28.79
A	8	0.09	0.3000	214.0	24.96	B	8	0.11	0.3317	213.0	27.57

**Test Parameters**

P <sub>bar</sub> - Barometric pressure, inches Hg	25.34	% CO <sub>2</sub>	0.50
P <sub>g</sub> - Stack Pressure, inches of H <sub>2</sub> O	0.10	% O <sub>2</sub>	20.50
P <sub>s</sub> - Absolute stack pressure, inches Hg	25.35	% N <sub>2</sub>	79.00
t <sub>s</sub> - Average stack temperature, °F	212.5	Md - dry basis lb/lb mole	28.90
Duct Shape:	Circular	Ms - wet basis lb/lb mole	27.527
Diameter, Feet	0.25		

Cross Sectional Area of Stack, Ft<sup>2</sup>

0.05

**Bws - Moisture content fraction**      **0.126**

Moisture determined by wb/db?      N

**Method 2 Results**

Average DP	0.0900	Q - ACFM	75
Average Sqrt DP	0.2990	Qsd - DSCFM	43
Average Velocity Vs (ft/sec)	24.842	Qs - SCFM	50
		Qs - SCFH	2,974



**METHOD 4 MOISTURE DETERMINATION**

<b>Project Number:</b> M231408	<b>Run Number:</b> 1	
<b>Client:</b> PCC Structurals	<b>Operating Level:</b> Normal	
<b>Facility:</b> Carson City Facility	<b>Time:</b> <b>Start-</b> 6:45	<b>End-</b> 7:45
<b>Test Location:</b> System 1	<b>Test Engineer:</b> Rods	
<b>Test Date:</b> 4/26/2023	<b>Test Tech:</b> AMS	

<b>Pressure, Barometric(Hg"):</b> 25.34	<b>Meter Calibration (Y):</b> 0.999
<b>Pressure, Static (H<sub>2</sub>O"):</b> 0.10	<b>Meter Delta H (dH):</b> 1.687
<b>Pressure, Stack (Hg"):</b> 25.35	<b>Sample Delta H (dH):</b> 1.700
<b>Temperature, Stack (°F):</b> 220	<b>Initial Wt:</b> 922.5
<b>Meter Initial Volume:</b> 30.008	<b>Final Wt:</b> 935.8
<b>Meter Final Volume:</b> 76.778	<b>Initial Volume:</b> 2085.7
<b>Meter Temperature:</b> 60.60	<b>Final Volume:</b> 2207.0
<b>Meter Volume dscf:</b> 40.331	<b>Water Vapor in Flue Gas (Bws):</b> 0.136

<b>Project Number:</b> M231408	<b>Run Number:</b> 2	
<b>Client:</b> PCC Structurals	<b>Operating Level:</b> Normal	
<b>Facility:</b> Carson City Facility	<b>Time:</b> <b>Start-</b> 8:00	<b>End-</b> 9:00
<b>Test Location:</b> System 1	<b>Test Engineer:</b> Rods	
<b>Test Date:</b> 4/26/2023	<b>Test Tech:</b> AMS	

<b>Pressure, Barometric(Hg"):</b> 25.34	<b>Meter Calibration (Y):</b> 0.999
<b>Pressure, Static (H<sub>2</sub>O"):</b> 0.10	<b>Meter Delta H (dH):</b> 1.687
<b>Pressure, Stack (Hg"):</b> 25.35	<b>Sample Delta H (dH):</b> 1.700
<b>Temperature, Stack (°F):</b> 220	<b>Initial Wt:</b> 909.7
<b>Meter Initial Volume:</b> 77.757	<b>Final Wt:</b> 924.4
<b>Meter Final Volume:</b> 124.059	<b>Initial Volume:</b> 2126.4
<b>Meter Temperature:</b> 71.50	<b>Final Volume:</b> 2232.9
<b>Meter Volume dscf:</b> 39.109	<b>Water Vapor in Flue Gas (Bws):</b> 0.127

<b>Project Number:</b> M231408	<b>Run Number:</b> 3	
<b>Client:</b> PCC Structurals	<b>Operating Level:</b> Normal	
<b>Facility:</b> Carson City Facility	<b>Time:</b> <b>Start-</b> 9:15	<b>End-</b> 10:15
<b>Test Location:</b> System 1	<b>Test Engineer:</b> Rods	
<b>Test Date:</b> 4/26/2023	<b>Test Tech:</b> AMS	

<b>Pressure, Barometric(Hg"):</b> 25.34	<b>Meter Calibration (Y):</b> 0.999
<b>Pressure, Static (H<sub>2</sub>O"):</b> 0.10	<b>Meter Delta H (dH):</b> 1.687
<b>Pressure, Stack (Hg"):</b> 25.35	<b>Sample Delta H (dH):</b> 1.700
<b>Temperature, Stack (°F):</b> 214	<b>Initial Wt:</b> 912.7
<b>Meter Initial Volume:</b> 125.784	<b>Final Wt:</b> 927.8
<b>Meter Final Volume:</b> 174.734	<b>Initial Volume:</b> 2077.7
<b>Meter Temperature:</b> 81.20	<b>Final Volume:</b> 2187.5
<b>Meter Volume dscf:</b> 40.605	<b>Water Vapor in Flue Gas (Bws):</b> 0.126

**PCC Structural  
Carson City Facility  
System 1  
Volumetric Flow Data - Normal Load**

<b>Test Run</b>	<b>Test Date</b>	<b>Pre Flow SCFM</b>	<b>Post Flow SCFM</b>	<b>Average Reference Method Flow SCFM</b>
Pre 1/Post 1	04/26/23	64	42	53
Pre 2/Post 2	04/26/23	42	60	51
Pre 3/Post 3	04/26/23	60	50	55

<b>Test Run</b>	<b>Test Date</b>	<b>Pre Flow DSCFM</b>	<b>Post Flow DSCFM</b>	<b>Average Reference Method Flow DSCFM</b>
Pre 1/Post 1	04/26/23	55	36	46
Pre 2/Post 2	04/26/23	36	52	44
Pre 3/Post 3	04/26/23	52	43	48

**Client:** PCC Structural  
**Facility:** Carson Facility  
**Project #:** M231408  
**Test Location:** System 1 - Autoclave  
**Operating Condition:** Normal  
**Date:** 4/26/23  
**Run 1**

<u>Time</u>	<u>O2 % (dry)</u>	<u>CO2 % (dry)</u>	<u>THC ppmv</u>
6:44	20.76	0.13	4.05
6:45	20.78	0.13	4.15
6:46	20.80	0.13	4.17
6:47	20.82	0.12	4.12
6:48	20.83	0.12	4.44
6:49	20.84	0.13	4.86
6:50	20.83	0.15	5.68
6:51	20.52	0.09	6.27
6:52	20.93	0.08	5.47
6:53	20.60	0.31	6.65
6:54	20.64	0.34	4.58
6:55	20.62	0.33	4.16
6:56	20.59	0.35	4.46
6:57	20.60	0.30	5.44
6:58	20.64	0.25	4.35
6:59	20.66	0.22	3.60
7:00	20.67	0.19	3.13
7:01	20.70	0.15	2.62
7:02	20.72	0.13	2.01
7:03	20.74	0.13	1.71
7:04	20.75	0.12	1.60
7:05	20.77	0.12	1.62
7:06	20.79	0.12	1.85
7:07	20.81	0.12	1.85
7:08	20.83	0.12	1.89
7:09	20.83	0.12	2.02
7:10	20.84	0.11	1.68
7:11	20.85	0.11	1.63
7:12	20.85	0.11	1.74
7:13	20.80	0.24	15.29
7:15	20.95	0.06	8.46
7:16	20.69	0.24	18.02
7:17	20.67	0.28	23.74
7:18	20.65	0.29	17.59
7:19	20.62	0.30	14.65
7:20	20.59	0.30	15.67
7:21	20.57	0.30	16.34
7:22	20.54	0.30	16.94
7:23	20.52	0.30	16.70
7:24	20.49	0.29	16.24
7:25	20.47	0.29	15.40
7:26	20.45	0.29	14.68
7:27	20.44	0.29	14.61
7:28	20.42	0.29	13.80
7:29	20.41	0.29	13.15
7:30	20.40	0.29	12.37
7:31	20.39	0.29	11.78
7:32	20.38	0.29	11.11
7:33	20.38	0.28	10.37
7:34	20.37	0.28	9.81
7:35	20.36	0.28	8.73
7:36	20.36	0.28	8.62
7:37	20.36	0.28	7.98
7:38	20.36	0.26	6.64
7:39	20.40	0.21	4.94
7:40	20.43	0.19	4.04
7:41	20.43	0.18	3.38
7:42	20.39	0.23	3.84
7:43	20.42	0.18	3.89
7:44	20.43	0.17	3.20
<b>Average</b>	<b>20.61</b>	<b>0.21</b>	<b>7.70</b>
<b>Min</b>	<b>20.36</b>	<b>0.06</b>	<b>1.60</b>
<b>Max</b>	<b>20.95</b>	<b>0.35</b>	<b>23.74</b>

**Client:** PCC Structurals  
**Facility:** Carson Facility  
**Project #:** M231408  
**Test Location:** System 1 - Autoclave  
**Operating Condition:** Normal  
**Date:** 4/26/23  
**Run 2**

<u>Time</u>	<u>O2 % (dry)</u>	<u>CO2 % (dry)</u>	<u>THC ppmv</u>
7:59	20.84	0.02	4.58
8:00	20.99	0.04	3.34
8:01	20.92	0.19	92.01
8:02	21.12	0.04	64.61
8:03	21.15	0.04	24.52
8:04	21.00	0.03	24.87
8:05	21.08	0.04	19.89
8:06	21.07	0.04	14.02
8:07	21.06	0.04	10.93
8:08	21.04	0.04	9.14
8:09	21.02	0.03	8.32
8:10	21.00	0.02	6.66
8:11	20.99	0.02	5.41
8:12	20.99	0.02	4.65
8:13	20.99	0.02	4.17
8:14	20.97	0.04	7.17
8:15	21.01	0.03	5.56
8:16	21.03	0.02	4.17
8:17	21.05	0.02	3.48
8:18	21.07	0.02	3.30
8:19	21.08	0.02	2.69
8:20	21.10	0.02	2.22
8:21	21.11	0.02	2.05
8:22	21.13	0.02	1.90
8:23	21.14	0.02	1.86
8:24	21.15	0.02	1.77
8:25	21.15	0.02	1.93
8:26	21.16	0.02	1.69
8:27	21.16	0.02	1.72
8:28	21.16	0.03	1.94
8:30	21.18	0.02	1.50
8:31	21.18	0.02	1.45
8:32	21.18	0.03	1.73
8:33	21.18	0.03	2.10
8:34	21.17	0.03	1.82
8:35	21.16	0.03	1.93
8:36	21.04	0.17	89.34
8:37	21.19	0.04	45.45
8:38	21.19	0.03	15.22
8:39	21.18	0.04	23.54
8:40	21.07	0.04	46.12
8:41	20.97	0.04	43.28
8:42	20.94	0.04	33.44
8:43	20.73	0.04	24.87
8:44	20.81	0.04	19.91
8:45	20.77	0.03	17.18
8:46	20.75	0.03	15.31
8:47	20.71	0.04	13.58
8:48	20.69	0.04	11.32
8:49	20.67	0.04	11.30
8:50	20.65	0.04	10.69
8:51	20.64	0.03	10.19
8:52	20.64	0.03	9.74
8:53	20.63	0.03	8.96
8:54	20.63	0.03	8.39
8:55	20.62	0.03	8.21
8:56	20.62	0.04	8.39
8:57	20.61	0.03	7.86
8:58	20.61	0.03	7.28
8:59	20.61	0.01	8.90
<b>Average</b>	<b>20.96</b>	<b>0.03</b>	<b>14.20</b>
<b>Min</b>	<b>20.61</b>	<b>0.01</b>	<b>1.45</b>
<b>Max</b>	<b>21.19</b>	<b>0.19</b>	<b>92.01</b>

**Client:** PCC Structural  
**Facility:** Carson Facility  
**Project #:** M231408  
**Test Location:** System 1 - Autoclave  
**Operating Condition:** Normal  
**Date:** 4/26/23  
**Run 3**

<u>Time</u>	<u>O2 % (dry)</u>	<u>CO2 % (dry)</u>	<u>THC ppmv</u>
9:14	20.59	0.02	2.40
9:15	20.59	0.02	2.43
9:16	20.59	0.02	2.55
9:17	20.60	0.02	2.47
9:18	20.46	0.16	86.71
9:19	20.63	0.04	69.01
9:20	20.62	0.03	21.81
9:21	20.62	0.03	17.94
9:22	20.62	0.03	18.81
9:23	20.50	0.03	23.35
9:24	20.58	0.03	27.87
9:25	20.58	0.03	25.65
9:26	20.59	0.03	22.61
9:27	20.62	0.03	21.35
9:28	20.63	0.03	20.31
9:29	20.62	0.03	20.80
9:30	20.62	0.03	22.14
9:31	20.61	0.03	22.69
9:32	20.61	0.03	21.90
9:33	20.61	0.03	20.34
9:34	20.60	0.03	19.70
9:35	20.60	0.03	19.50
9:36	20.59	0.02	18.83
9:37	20.60	0.03	18.42
9:38	20.59	0.03	17.50
9:39	20.59	0.02	17.03
9:40	20.58	0.02	15.08
9:41	20.58	0.02	10.51
9:42	20.58	0.02	9.47
9:43	20.58	0.01	9.07
9:45	20.57	0.02	8.42
9:46	20.57	0.02	7.81
9:47	20.57	0.02	8.27
9:48	20.57	0.02	8.06
9:49	20.56	0.02	7.58
9:50	20.57	0.02	6.90
9:51	20.57	0.02	6.70
9:52	20.56	0.02	6.93
9:53	20.56	0.03	7.57
9:54	20.55	0.02	7.19
9:55	20.57	0.02	6.12
9:56	20.57	0.02	5.49
9:57	20.55	0.03	7.91
9:58	20.57	0.01	8.29
9:59	20.56	0.01	6.64
10:00	20.56	0.01	5.67
10:01	20.57	0.01	5.37
10:02	20.58	0.01	4.25
10:03	20.57	0.01	3.84
10:04	20.57	0.01	3.54
10:05	20.56	0.01	3.55
10:06	20.57	0.01	3.29
10:07	20.56	0.02	3.18
10:08	20.57	0.01	3.01
10:09	20.57	0.01	3.27
10:10	20.57	0.01	3.15
10:11	20.57	0.01	2.81
10:12	20.57	0.01	2.71
10:13	20.57	0.01	2.84
10:14	20.57	0.01	2.65
<b>Average</b>	<b>20.58</b>	<b>0.02</b>	<b>13.20</b>
<b>Min</b>	<b>20.46</b>	<b>0.01</b>	<b>2.40</b>
<b>Max</b>	<b>20.63</b>	<b>0.16</b>	<b>86.71</b>

**Method 1 and 2 Cyclonic Flow Check Data**

**Project Number** M231408  
**Client:** PCC Structural, Inc.  
**Facility:** Carson City Facility  
**Location:** System 2 - Mold Burnout  
**Pitot ID:** 4039  
**Pitot Coefficient:** 0.840  
**Probe Length:** 6

**Source Condition:** Normal  
**Run No.:** 1  
**Date:** 4/25/2023  
**Start Time:** 3:05  
**End Time:** 3:20  
**RM Testers:** AMS/RB  
**Port Length:** 6.00

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)
A	1	0.10	0.3162	1200.0	0.0	33.80	C	5	0.10	0.3162	1210.0	1.0	33.90
A	2	0.11	0.3317	1209.0	1.0	35.55	D	1	0.10	0.3162	1211.0	3.0	33.91
A	3	0.11	0.3317	1210.0	2.0	35.56	D	2	0.11	0.3317	1211.0	3.0	35.57
A	4	0.11	0.3317	1210.0	0.0	35.56	D	3	0.11	0.3317	1211.0	1.0	35.57
A	5	0.10	0.3162	1211.0	2.0	33.91	D	4	0.11	0.3317	1211.0	1.0	35.57
B	1	0.10	0.3162	1211.0	0.0	33.91	D	5	0.10	0.3162	1212.0	1.0	33.92
B	2	0.11	0.3317	1210.0	1.0	35.56	E	1	0.10	0.3162	1212.0	2.0	33.92
B	3	0.12	0.3464	1210.0	1.0	37.14	E	2	0.10	0.3162	1213.0	2.0	33.93
B	4	0.11	0.3317	1211.0	2.0	35.57	E	3	0.11	0.3317	1213.0	3.0	35.59
B	5	0.10	0.3162	1211.0	0.0	33.91	E	4	0.10	0.3162	1214.0	1.0	33.94
C	1	0.10	0.3162	1211.0	1.0	33.91	E	5	0.10	0.3162	1215.0	1.0	33.95
C	2	0.11	0.3317	1210.0	2.0	35.56							
C	3	0.13	0.3606	1210.0	1.0	38.66							
C	4	0.12	0.3464	1210.0	2.0	37.14							

Average Yaw Angle 1.4 °

Run 1 - Method 5/202

Client: PCC Structurals, Inc.  
 Facility: Carson City Facility  
 Test Location: System 2 - Mold Burnout  
 Source Condition: Normal

Date: 4/25/23  
 Start Time: 3:40  
 End Time: 5:40

DRY GAS METER CONDITIONS				STACK CONDITIONS			
ΔH:	1.88	in. H <sub>2</sub> O		Static Pressure	0.00	in. H <sub>2</sub> O	
Meter Temperature, Tm:	53.7	°F		Flue Pressure (Ps):	25.22	in. Hg. abs.	
Sqrt ΔP:	0.325	in. H <sub>2</sub> O		Carbon Dioxide:	4.70	%	
Stack Temperature, Ts:	1211.4	°F		Oxygen:	13.10	%	
Meter Volume, Vm:	83.231	ft <sup>3</sup>		Nitrogen:	82.20	%	
Meter Volume, Vmstd:	72.426	dscf		Gas Weight dry, Md:	29.276	lb/lb mole	
Meter Volume, Vwstd:	5.577	wscf		Gas Weight wet, Ms:	28.470	lb/lb mole	
Isokinetic Variance:	102.7	%		Excess Air:	---	%	
				Gas Velocity, Vs:	35.590	fps	
Test Length:	100.00	in mins.		Volumetric Flow:	8,542	acfm	
Nozzle Diameter:	0.495	in inches		Volumetric Flow:	2,112	dscfm	
Barometric Pressure:	25.22	in Hg		Volumetric Flow:	2,274	scfm	

MOISTURE DETERMINATION

Initial Impinger Content:	1828.7	ml	Silica Initial Wt.	890.8	grams
Final Impinger Content:	1929.2	ml	Silica Final Wt.	908.7	grams
Impinger Difference:	100.5	ml	Silica Difference:	17.9	grams
Total Water Gain:	118.4		Moisture, Bws:	0.071	

Port-Point No.	Clock Time	Velocity Head Δp in. H <sub>2</sub> O	Orifice ΔH in. H <sub>2</sub> O	Actual Meter Vol. ft <sup>3</sup>	Stack Temp °F	Meter Temp		Probe Temp °F	Filter Exit Temp °F	Impinger Exit Temp °F	CPM Filter Exit Temp °F
						Inlet °F	Outlet °F				
1-1	3:40:00	0.10	1.78	72.588	1208	52	52	250	250	54	71
1-2	3:44:00	0.11	1.95	76.750	1207	52	52	249	248	54	72
1-3	3:48:00	0.11	1.95	79.220	1208	52	52	248	247	54	72
1-4	3:52:00	0.10	1.78	82.610	1209	52	52	249	248	54	72
1-5	3:56:00	0.10	1.78	85.845	1210	52	52	250	249	54	72
	4:00:00			89.069							
2-1	4:05:00	0.10	1.78	89.069	1211	52	52	250	250	54	72
2-2	4:09:00	0.11	1.95	92.305	1212	52	52	251	251	54	72
2-3	4:13:00	0.12	2.13	95.675	1212	53	53	251	252	54	72
2-4	4:17:00	0.10	1.78	99.235	1212	53	53	252	251	54	72
2-5	4:21:00	0.10	1.78	102.475	1213	53	53	251	249	54	72
	4:25:00			105.707							
3-1	4:30:00	0.10	1.78	105.707	1213	53	53	252	248	54	72
3-2	4:34:00	0.11	1.95	108.950	1214	53	53	254	251	54	72
3-3	4:38:00	0.12	2.13	112.335	1215	54	54	253	250	54	72
3-4	4:42:00	0.11	1.95	115.900	1218	54	54	252	250	54	72
3-5	4:46:00	0.10	1.78	119.275	1219	55	55	252	251	54	72
	4:50:00			122.522							
4-1	4:55:00	0.10	1.78	122.522	1214	55	55	251	250	55	73
4-2	4:59:00	0.11	1.95	125.775	1213	55	55	249	252	55	73
4-3	5:03:00	0.11	1.95	129.185	1203	55	55	249	249	55	73
4-4	5:07:00	0.11	1.95	132.595	1203	55	55	250	251	55	73
4-5	5:11:00	0.10	1.78	136.010	1202	55	55	250	250	55	73
	5:15:00			139.264							
5-1	5:20:00	0.10	1.78	139.264	1216	55	55	248	249	55	73
5-2	5:24:00	0.10	1.78	142.515	1214	55	55	249	250	56	74
5-3	5:28:00	0.11	1.95	145.765	1214	55	55	250	250	56	74
5-4	5:32:00	0.11	1.95	149.175	1212	55	55	252	251	56	74
5-5	5:36:00	0.10	1.78	152.575	1212	55	55	251	252	56	74
	5:40:00			155.819							

Total	1:40:00			83.231		53.7	53.7				
Average			1.88		1211.4	53.7					
Min			1.78		1202.0	52.0					
Max			2.13		1219.0	55.0					

### Impinger Weight Sheet - Run 1

**Client:** PCC Structurals, Inc.  
**Facility:** Carson City Facility  
**Test Location:** System 2 - Mold Burnout  
**Project #:** M231408  
**Date:** 4/25/2023  
**Test Method:** 5/202  
**Weighed/Measured By:** KLJ  
**Balance ID:** LV4

**Scale Calibration Check Date:** 4/25/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**  
 must be within  $\pm 0.5g$  of certified mass  

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.0</u>
700	<u>700.1</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
Empty	433.1	432.2	0.9
Empty	643.1	639.5	3.6
DI Water	853.0	757.0	96.0
Silica Gel	908.7	890.8	17.9

<u>1,929.2</u> <b>Liquid Final</b>	<u>1,828.7</u> <b>Liquid Initial</b>	<u>100.5</u> <b>Liquid Gain</b>
<u>908.7</u> <b>Silica Final</b>	<u>890.8</u> <b>Silica Initial</b>	<u>17.9</u> <b>Silica Gain</b>



Run 2 - Method 5/202

Client: PCC Structurals, Inc.  
 Facility: Carson City Facility  
 Test Location: System 2 - Mold Burnout  
 Source Condition: Normal

Date: 4/25/23  
 Start Time: 6:05  
 End Time: 8:01

DRY GAS METER CONDITIONS

ΔH:	1.84	In. H <sub>2</sub> O
Meter Temperature, Tm:	56.7	°F
Sqrt ΔP:	0.322	In. H <sub>2</sub> O
Stack Temperature, Ts:	1221.6	°F
Meter Volume, Vm:	82.678	ft <sup>3</sup>
Meter Volume, Vmstd:	71.514	dscf
Meter Volume, Vwstd:	5.384	wscf
Isokinetic Variance:	102.6	%I
Test Length:	100.00	in mins.
Nozzle Diameter:	0.495	in inches
Barometric Pressure:	25.22	in Hg

STACK CONDITIONS

Static Pressure	0.00	in. H <sub>2</sub> O
Flue Pressure (Ps):	25.22	in. Hg. abs.
Carbon Dioxide:	5.00	%
Oxygen:	12.50	%
Nitrogen:	82.5	%
Gas Weight dry, Md:	29.300	lb/lb mole
Gas Weight wet, Ms:	28.509	lb/lb mole
Excess Air:	---	%
Gas Velocity, Vs:	35.341	fps
Volumetric Flow:	8,482	acfm
Volumetric Flow:	2,087	dscfm
Volumetric Flow:	2,245	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	1847.5	ml	Silica Initial Wt.	906.5	grams
Final Impinger Content:	1950.5	ml	Silica Final Wt.	917.8	grams
Impinger Difference:	103.0	ml	Silica Difference:	11.3	grams

Total Water Gain: 114.3                      Moisture, Bws: 0.070

Port-Point No.	Clock Time	Velocity	Orifice	Actual Meter Vol. ft <sup>3</sup>	Stack Temp °F	Meter Temp		Probe Temp °F	Filter Exit Temp °F	Impinger Exit Temp °F	CPM Filter Exit Temp °F
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O			Inlet °F	Outlet °F				
1-1	6:05:00	0.10	1.78	60.544	1215	53	53	248	249	45	73
1-2	6:09:00	0.10	1.78	63.780	1218	53	53	249	251	46	73
1-3	6:13:00	0.11	1.95	67.010	1223	54	54	250	252	46	74
1-4	6:17:00	0.11	1.95	70.400	1232	54	54	250	250	47	74
1-5	6:21:00	0.10	1.78	73.775	1234	55	55	252	248	47	74
	6:25:00			77.007							
2-1	6:29:00	0.10	1.78	77.007	1245	55	55	251	250	47	74
2-2	6:33:00	0.11	1.95	80.225	1249	55	55	250	250	48	74
2-3	6:37:00	0.11	1.95	83.600	1245	56	56	250	250	48	74
2-4	6:41:00	0.11	1.95	86.975	1195	56	56	252	249	47	74
2-5	6:45:00	0.10	1.78	90.415	1201	57	57	249	253	48	74
	6:49:00			93.678							
3-1	6:53:00	0.10	1.78	93.678	1262	57	57	250	254	48	74
3-2	6:57:00	0.10	1.78	96.885	1254	57	57	250	252	48	74
3-3	7:01:00	0.11	1.95	100.100	1236	58	58	249	250	48	74
3-4	7:05:00	0.11	1.95	103.480	1232	58	58	252	252	48	74
3-5	7:09:00	0.10	1.78	106.900	1239	59	59	250	250	50	74
	7:13:00			110.166							
4-1	7:17:00	0.10	1.78	110.166	1217	59	59	249	249	51	74
4-2	7:21:00	0.10	1.78	113.445	1208	60	60	247	250	52	76
4-3	7:25:00	0.10	1.78	116.720	1207	60	60	248	251	53	76
4-4	7:29:00	0.11	1.95	120.000	1203	59	59	252	250	54	74
4-5	7:33:00	0.11	1.95	123.450	1199	58	58	252	249	56	74
	7:37:00			126.888							
5-1	7:41:00	0.10	1.78	126.888	1206	57	57	251	251	56	73
5-2	7:45:00	0.10	1.78	130.150	1213	57	57	250	250	57	72
5-3	7:49:00	0.10	1.78	133.420	1207	57	57	252	250	58	71
5-4	7:53:00	0.10	1.78	136.670	1203	57	57	250	250	59	72
5-5	7:57:00	0.10	1.78	139.950	1197	57	57	250	251	60	73
	8:01:00			143.222							

Total	1:40:00			82.678		56.7	56.7				
Average			1.84		1221.6			56.7			
Min			1.78		1195.0			53.0			
Max			1.95		1262.0			60.0			

**Impinger Weight Sheet - Run 2**

Client: PCC Structurals, Inc.  
 Facility: Carson City Facility  
 Test Location: System 2 - Mold Burnout  
 Project #: M231408  
 Date: 4/25/2023  
 Test Method: 5/202  
 Weighed/Measured By: KLJ  
 Balance ID: LV4

Scale Calibration Check Date: 4/25/2023  
Scale Calibration Check (see QS-6.05C for procedure)  
 must be within  $\pm 0.5g$  of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.0</u>
700	<u>700.1</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
Empty	430.1	429.4	0.7
Empty	653.9	639.7	14.2
DI Water	866.5	778.4	88.1
Silica Gel	917.8	906.5	11.3

<u>1,950.5</u>	<u>1,847.5</u>	<u>103.0</u>
<b>Liquid Final</b>	<b>Liquid Initial</b>	<b>Liquid Gain</b>
<u>917.8</u>	<u>906.5</u>	<u>11.3</u>
<b>Silica Final</b>	<b>Silica Initial</b>	<b>Silica Gain</b>

Run 3 - Method 5/202

Client: PCC Structurals, Inc.  
 Facility: Carson City Facility  
 Test Location: System 2 - Mold Burnout  
 Source Condition: Normal

Date: 4/25/23  
 Start Time: 8:35  
 End Time: 10:31

DRY GAS METER CONDITIONS

ΔH: 1.82 in. H<sub>2</sub>O  
 Meter Temperature, Tm: 60.1 °F  
 Sqrt ΔP: 0.320 in. H<sub>2</sub>O  
 Stack Temperature, Ts: 1158.8 °F  
 Meter Volume, Vm: 83.965 ft<sup>3</sup>  
 Meter Volume, Vmstd: 72.153 dscf  
 Meter Volume, Vwstd: 5.530 wscf  
 Isokinetic Variance: 102.2 %I  
 Test Length: 100.00 in mins.  
 Nozzle Diameter: 0.495 in inches  
 Barometric Pressure: 25.22 in Hg

STACK CONDITIONS

Static Pressure 0.00 in. H<sub>2</sub>O  
 Flue Pressure (Ps): 25.22 in. Hg. abs.  
 Carbon Dioxide: 4.30 %  
 Oxygen: 13.80 %  
 Nitrogen: 81.9 %  
 Gas Weight dry, Md: 29.240 lb/lb mole  
 Gas Weight wet, Ms: 28.440 lb/lb mole  
 Excess Air: --- %  
 Gas Velocity, Vs: 34.517 fps  
 Volumetric Flow: 8,284 acfm  
 Volumetric Flow: 2,115 dscfm  
 Volumetric Flow: 2,277 scfm

MOISTURE DETERMINATION

Initial Impinger Content: 1831.4 ml  
 Final Impinger Content: 1940.1 ml  
 Impinger Difference: 108.7 ml  
 Silica Initial Wt. 894.9 grams  
 Silica Final Wt. 903.6 grams  
 Silica Difference: 8.7 grams  
 Total Water Gain: 117.4  
 Moisture, Bws: 0.071

Port-Point No.	Clock Time	Velocity	Orifice	Actual Meter Vol. ft <sup>3</sup>	Stack Temp °F	Meter Temp		Probe Temp °F	Filter Exit Temp °F	Impinger Exit Temp °F	CPM Filter Exit Temp °F
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O			Inlet °F	Outlet °F				
1-1	8:35:00	0.10	1.78	44.996	1199	59	59	251	246	64	83
1-2	8:39:00	0.11	1.95	48.290	1202	59	59	251	249	50	71
1-3	8:43:00	0.11	1.95	51.725	1192	59	59	250	251	52	71
1-4	8:47:00	0.10	1.78	55.180	1151	59	59	250	251	51	71
1-5	8:51:00	0.10	1.78	58.520	1159	59	59	251	251	52	70
	8:55:00			61.846							
2-1	8:59:00	0.10	1.78	61.846	1165	59	59	251	250	53	71
2-2	9:03:00	0.10	1.78	65.170	1171	60	60	250	250	54	72
2-3	9:07:00	0.10	1.78	68.495	1159	60	60	250	249	56	74
2-4	9:11:00	0.11	1.95	71.820	1169	59	59	251	250	57	74
2-5	9:15:00	0.10	1.78	75.300	1151	60	60	250	250	58	74
	9:19:00			78.639							
3-1	9:23:00	0.10	1.78	78.639	1117	60	60	250	249	58	74
3-2	9:27:00	0.11	1.95	82.025	1163	59	59	251	250	58	75
3-3	9:31:00	0.11	1.95	85.500	1154	60	60	250	251	59	75
3-4	9:35:00	0.10	1.78	88.640	1155	60	60	250	250	59	75
3-5	9:39:00	0.10	1.78	91.975	1161	60	60	250	250	58	75
	9:43:00			95.309							
4-1	9:47:00	0.10	1.78	95.309	1167	60	60	250	250	58	76
4-2	9:51:00	0.10	1.78	98.635	1132	61	61	250	250	58	77
4-3	9:55:00	0.11	1.95	102.005	1138	61	61	250	250	59	77
4-4	9:59:00	0.10	1.78	105.540	1154	61	61	250	251	59	77
4-5	10:03:00	0.10	1.78	108.875	1159	61	61	251	251	59	77
	10:07:00			112.211							
5-1	10:11:00	0.10	1.78	112.211	1162	61	61	249	249	59	77
5-2	10:15:00	0.10	1.78	115.550	1163	61	61	250	251	59	78
5-3	10:19:00	0.10	1.78	118.890	1130	61	61	248	249	60	78
5-4	10:23:00	0.10	1.78	122.250	1141	61	61	251	249	60	78
5-5	10:27:00	0.10	1.78	125.615	1156	62	62	250	250	61	78
	10:31:00			128.961							

Total 1:40:00 83.965 60.1 60.1  
 Average 1.82 1158.8 60.1  
 Min 1.78 1117.0 59.0  
 Max 1.95 1202.0 62.0

### Impinger Weight Sheet - Run 3

**Client:** PCC Structurals, Inc.  
**Facility:** Carson City Facility  
**Test Location:** System 2 - Mold Burnout  
**Project #:** M231408  
**Date:** 4/25/2023  
**Test Method:** 5/202  
**Weighed/Measured By:** KLJ  
**Balance ID:** LV4

**Scale Calibration Check Date:** 4/25/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**

must be within ± 0.5g of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	200.0
500	500.0
700	700.1

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
Empty	433.3	431.9	1.4
Empty	655.7	640.4	15.3
DI Water	851.1	759.1	92.0
Silica Gel	903.6	894.9	8.7

1,940.1	1,831.4	108.7
<b>Liquid Final</b>	<b>Liquid Initial</b>	<b>Liquid Gain</b>
903.6	894.9	8.7
<b>Silica Final</b>	<b>Silica Initial</b>	<b>Silica Gain</b>

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 3 - Air Furnaces  
**Project #:** M231408  
**Test Method:** 5/202  
**Test Engineer:** TWM  
**Test Technician:** RODS

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
<b>Meter ID:</b>	CM13	CM13	CM13
<b>Pitot ID:</b>	3002	3002	3002
<b>Filter ID:</b>	6781	6780	6782
<b>Filter Pre-Weight (grams):</b>	0.46808	0.46824	0.46946
<b>Nozzle Diameter (Inches):</b>	0.166	0.166	0.166
<b>Meter Calibration Date:</b>	4/18/2023	4/18/2023	4/18/2023
<b>Meter Calibration Factor (Y):</b>	0.992	0.992	0.992
<b>Meter Orifice Setting (Delta H):</b>	1.520	1.520	1.520
<b>Nozzle Kit ID Number and Material:</b>	Quarts 6 (123)	Quarts 6 (123)	Quarts 6 (123)
<b>Pitot Tube Coefficient:</b>		0.840	
<b>Probe Length (Feet):</b>		3.0	
<b>Probe Liner Material:</b>		Quartz	
<b>Sample Plane:</b>		Horizontal	
<b>Port Length (Inches):</b>		0.00	
<b>Port Size (Diameter, Inches):</b>		4.00	
<b>Port Type:</b>		Hole in duct	
<b>Duct Shape:</b>		Circular	
<b>Diameter (Feet):</b>		0.5	
<b>Duct Area (Square Feet):</b>		0.196	
<b>Upstream Diameters:</b>		9.3	
<b>Downstream Diameters:</b>		3.5	
<b>Number of Ports Sampled:</b>		2	
<b>Number of Points per Port:</b>		12	
<b>Minutes per Point:</b>		4.0	
<b>Minutes per Reading:</b>		4.0	
<b>Total Number of Traverse Points:</b>		24	
<b>Test Length (Minutes):</b>		96	
<b>Train Type:</b>		Anderson Box	
<b>Source Condition:</b>		Normal	
<b>Moisture Balance ID:</b>		LV4	
<b># of Runs</b>		3	

**Method 1 and 2 Cyclonic Flow Check Data**

**Project Number** M231408  
**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Location:** System 3 - Air Furnaces  
**Pitot ID:** 3002  
**Pitot Coefficient:** 0.840  
**Probe Length:** 3

**Source Condition:** Normal  
**Run No.:** 1  
**Date:** 4/25/2023  
**Start Time:** 3:05  
**End Time:** 3:20  
**RM Testers:** TWM  
**Port Length:** 0.00

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)
A	1	3.10	1.7607	86.0	2.0	109.49	B	1	3.10	1.7607	86.0	1.0	109.49
A	2	3.10	1.7607	86.0	1.0	109.49	B	2	3.10	1.7607	86.0	1.0	109.49
A	3	3.00	1.7321	86.0	1.0	107.71	B	3	3.00	1.7321	86.0	1.0	107.71
A	4	3.00	1.7321	86.0	2.0	107.71	B	4	3.00	1.7321	86.0	2.0	107.71
A	5	3.00	1.7321	86.0	1.0	107.71	B	5	2.80	1.6733	86.0	1.0	104.06
A	6	3.00	1.7321	86.0	1.0	107.71	B	6	2.80	1.6733	86.0	2.0	104.06
A	7	2.80	1.6733	85.0	2.0	103.96	B	7	2.70	1.6432	86.0	1.0	102.18
A	8	2.80	1.6733	85.0	1.0	103.96	B	8	2.70	1.6432	85.0	1.0	102.09
A	9	2.70	1.6432	85.0	2.0	102.09	B	9	2.60	1.6125	85.0	1.0	100.18
A	10	2.60	1.6125	85.0	1.0	100.18	B	10	2.60	1.6125	85.0	2.0	100.18
A	11	2.60	1.6125	85.0	2.0	100.18	B	11	2.50	1.5811	85.0	2.0	98.24
A	12	2.50	1.5811	85.0	1.0	98.24	B	12	2.50	1.5811	85.0	1.0	98.24

**Average Yaw Angle** 1.375 °

Run 1 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 3 - Air Furnaces  
 Source Condition: Normal

Date: 4/25/23  
 Start Time: 3:40  
 End Time: 5:23

DRY GAS METER CONDITIONS				STACK CONDITIONS			
ΔH:	1.63	in. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O	
Meter Temperature, Tm:	53.7	°F		Flue Pressure (Ps):	25.27	in. Hg. abs.	
Sqrt ΔP:	1.676	in. H <sub>2</sub> O		Carbon Dioxide:		%	
Stack Temperature, Ts:	82.2	°F		Oxygen:		%	
Meter Volume, Vm:	79.598	ft <sup>3</sup>		Nitrogen:	#VALUE!	%	
Meter Volume, Vmstd:	68.729	dscf		Gas Weight dry, Md:	29.000	lb/lb mole	
Meter Volume, Vwstd:	0.499	wscf		Gas Weight wet, Ms:	28.921	lb/lb mole	
Isokinetic Variance:	93.9	%I		Excess Air:	#VALUE!	%	
Test Length:	96.00	in mins.		Gas Velocity, Vs:	103.666	fps	
Nozzle Diameter:	0.166	in inches		Volumetric Flow:	1,221	acfm	
Barometric Pressure:	25.22	in Hg		Volumetric Flow:	997	dscfm	
				Volumetric Flow:	1,004	scfm	

MOISTURE DETERMINATION

Initial Impinger Content:	1758.7	ml	Silica Initial Wt.	874.5	grams
Final Impinger Content:	1749.5	ml	Silica Final Wt.	894.3	grams
Impinger Difference:	-9.2	ml	Silica Difference:	19.8	grams
Total Water Gain:	10.6		Moisture, Bws:	0.007	Supersaturation Value, Bws: 0.044

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger	CPM Filter
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F	Exit Temp °F
1-1	3:40:00	3.10	1.80	69.233	87	50	48	252	247	45	72
1-2	3:44:00	3.10	1.80	72.660	86	50	48	252	247	44	71
1-3	3:48:00	3.00	1.74	76.110	86	50	48	252	248	44	70
1-4	3:52:00	3.00	1.74	79.480	86	50	48	252	248	44	70
1-5	3:56:00	3.00	1.74	82.860	86	50	48	252	248	43	70
1-6	4:00:00	2.90	1.68	86.230	86	50	48	251	249	44	70
1-7	4:04:00	2.80	1.62	89.570	85	51	48	251	249	43	70
1-8	4:08:00	2.80	1.62	92.850	85	51	48	248	242	42	70
1-9	4:12:00	2.70	1.57	96.130	85	54	49	253	248	43	70
1-10	4:16:00	2.60	1.51	99.350	85	55	49	251	249	46	70
1-11	4:20:00	2.60	1.51	102.530	85	57	50	251	251	49	70
1-12	4:24:00	2.50	1.45	105.710	85	58	50	252	247	53	70
	4:28:00			108.823							
2-1	4:35:00	3.10	1.80	108.823	84	59	53	251	250	56	71
2-2	4:39:00	3.10	1.80	112.310	84	59	53	251	250	56	71
2-3	4:43:00	3.00	1.74	115.800	84	59	53	251	250	56	71
2-4	4:47:00	3.00	1.74	119.230	82	60	53	250	248	56	71
2-5	4:51:00	2.80	1.62	122.690	80	61	54	249	245	55	71
2-6	4:55:00	2.80	1.62	126.010	78	61	54	248	249	55	71
2-7	4:59:00	2.70	1.57	129.380	77	61	55	248	251	55	71
2-8	5:03:00	2.70	1.57	132.680	76	61	54	248	247	54	71
2-9	5:07:00	2.60	1.51	135.990	75	61	54	248	249	54	71
2-10	5:11:00	2.60	1.51	139.210	75	61	54	253	249	54	71
2-11	5:15:00	2.50	1.45	142.440	75	60	54	249	250	54	71
2-12	5:19:00	2.50	1.45	145.610	76	60	55	253	249	55	71
	5:23:00			148.831							

Total	1:36:00			79.598		56.2	51.2				
Average			1.63		82.2	53.7					
Min			1.45		75.0	48.0					
Max			1.80		87.0	61.0					

**Impinger Weight Sheet - Run 1**

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 3 - Air Furnaces  
 Project #: M231408  
 Date: 4/25/2023  
 Test Method: 5/202  
 Weighed/Measured By: TWM  
 Balance ID: LV4

Scale Calibration Check Date: 4/25/2023  
Scale Calibration Check (see QS-6.05C for procedure)

must be within ± 0.5g of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.0</u>
700	<u>700.1</u>

<b>IMPINGER CONTENTS</b>	<b>FINAL MLS / GRAMS</b>	<b>INITIAL MLS / GRAMS</b>	<b>GAIN MLS / GRAMS</b>
Empty	413.6	413.1	0.5
Empty	647.6	646.6	1.0
DI Water	688.3	699.0	-10.7
Silica Gel	894.3	874.5	19.8

<u>1,749.5</u> <b>Liquid Final</b>	<u>1,758.7</u> <b>Liquid Initial</b>	<u>-9.2</u> <b>Liquid Gain</b>
<u>894.3</u> <b>Silica Final</b>	<u>874.5</u> <b>Silica Initial</b>	<u>19.8</u> <b>Silica Gain</b>



Run 2 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 3 - Air Furnaces  
 Source Condition: Normal

Date: 4/25/23  
 Start Time: 5:55  
 End Time: 7:38

DRY GAS METER CONDITIONS				STACK CONDITIONS		
ΔH:	1.93	In. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O
Meter Temperature, Tm:	59.0	°F		Flue Pressure (Ps):	25.27	in. Hg. abs.
Sqrt ΔP:	1.672	In. H <sub>2</sub> O		Carbon Dioxide:		%
Stack Temperature, Ts:	83.9	°F		Oxygen:		%
Meter Volume, Vm:	87.337	ft <sup>3</sup>		Nitrogen:	#VALUE!	%
Meter Volume, Vmstd:	74.710	dscf		Gas Weight dry, Md:	29.000	lb/lb mole
Meter Volume, Vwstd:	0.151	wscf		Gas Weight wet, Ms:	28.978	lb/lb mole
Isokinetic Variance:	102.0	%I		Excess Air:	#VALUE!	%
Test Length:	96.00	in mins.		Gas Velocity, Vs:	103.510	fps
Nozzle Diameter:	0.166	in inches		Volumetric Flow:	1,219	acfm
Barometric Pressure:	25.22	in Hg		Volumetric Flow:	998	dscfm
				Volumetric Flow:	1,000	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	1746.5	ml	Silica Initial Wt.	894.3	grams
Final Impinger Content:	1739.1	ml	Silica Final Wt.	904.9	grams
Impinger Difference:	-7.4	ml	Silica Difference:	10.6	grams
Total Water Gain:	3.2		Moisture, Bws:	0.002	Supersaturation Value, Bws: 0.046

Port- Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger	CPM Filter
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F	Exit Temp °F
1-1	5:55:00	3.10	2.14	49.445	83	53	53	252	243	46	70
1-2	5:59:00	3.10	2.14	53.240	82	57	53	252	252	45	70
1-3	6:03:00	3.00	2.07	56.830	84	59	53	249	250	46	70
1-4	6:07:00	3.00	2.07	60.720	84	61	53	248	249	48	70
1-5	6:11:00	2.90	2.00	64.560	84	61	54	253	252	48	70
1-6	6:15:00	2.90	2.00	68.030	83	61	55	251	251	49	70
1-7	6:19:00	2.80	1.93	71.650	84	62	55	248	247	49	70
1-8	6:23:00	2.80	1.93	75.590	85	62	55	245	251	49	70
1-9	6:27:00	2.70	1.86	79.220	85	62	55	252	247	49	70
1-10	6:31:00	2.70	1.86	82.770	85	62	55	253	251	50	70
1-11	6:35:00	2.60	1.79	86.350	83	62	55	247	249	50	70
1-12	6:39:00	2.60	1.79	89.860	84	62	55	254	251	50	70
	6:43:00			93.374							
2-1	6:50:00	3.00	2.07	93.374	87	57	56	254	250	49	70
2-2	6:54:00	3.00	2.07	97.130	85	62	57	253	249	48	70
2-3	6:58:00	2.90	2.00	100.620	86	63	57	253	249	48	70
2-4	7:02:00	2.90	2.00	104.590	88	65	58	252	248	48	70
2-5	7:06:00	2.80	1.93	108.220	88	65	58	249	248	48	70
2-6	7:10:00	2.80	1.93	111.640	87	66	58	250	248	48	70
2-7	7:14:00	2.70	1.86	115.020	85	66	59	248	248	48	70
2-8	7:18:00	2.70	1.86	119.160	82	64	59	249	249	48	70
2-9	7:22:00	2.60	1.79	122.780	81	63	59	250	249	48	70
2-10	7:26:00	2.60	1.79	126.310	80	63	58	251	246	49	70
2-11	7:30:00	2.50	1.73	129.840	79	63	58	251	246	49	70
2-12	7:34:00	2.50	1.73	133.320	79	63	58	252	247	50	70
	7:38:00			136.782							

Total	1:36:00			87.337		61.8	56.1				
Average			1.93		83.9	59.0					
Min			1.73		79.0	53.0					
Max			2.14		88.0	66.0					

**Impinger Weight Sheet - Run 2**

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 3 - Air Furnaces  
 Project #: M231408  
 Date: 4/25/2023  
 Test Method: 5/202  
 Weighed/Measured By: TWM  
 Balance ID: LV4

Scale Calibration Check Date: 4/25/2023  
Scale Calibration Check (see QS-6.05C for procedure)

must be within ± 0.5g of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.0</u>
700	<u>700.1</u>

<b>IMPINGER CONTENTS</b>	<b>FINAL MLS / GRAMS</b>	<b>INITIAL MLS / GRAMS</b>	<b>GAIN MLS / GRAMS</b>
Empty	412.2	412.6	-0.4
Empty	647.4	647.6	-0.2
DI Water	679.5	686.3	-6.8
Silica Gel	904.9	894.3	10.6

<u>1,739.1</u> <b>Liquid Final</b>	<u>1,746.5</u> <b>Liquid Initial</b>	<u>-7.4</u> <b>Liquid Gain</b>
<u>904.9</u> <b>Silica Final</b>	<u>894.3</u> <b>Silica Initial</b>	<u>10.6</u> <b>Silica Gain</b>

Run 3 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 3 - Air Furnaces  
 Source Condition: Normal

Date: 4/25/23  
 Start Time: 8:00  
 End Time: 9:42

DRY GAS METER CONDITIONS				STACK CONDITIONS		
ΔH:	1.90	In. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O
Meter Temperature, Tm:	61.0	°F		Flue Pressure (Ps):	25.27	in. Hg. abs.
Sqrt ΔP:	1.660	In. H <sub>2</sub> O		Carbon Dioxide:		%
Stack Temperature, Ts:	89.3	°F		Oxygen:		%
Meter Volume, Vm:	86.914	ft <sup>3</sup>		Nitrogen:	#VALUE!	%
Meter Volume, Vmstd:	74.053	dscf		Gas Weight dry, Md:	29.000	lb/lb mole
Meter Volume, Vwstd:	0.024	wscf		Gas Weight wet, Ms:	28.997	lb/lb mole
Isokinetic Variance:	102.2	%l		Excess Air:	#VALUE!	%
Test Length:	96.00	in mins.		Gas Velocity, Vs:	103.214	fps
Nozzle Diameter:	0.166	in inches		Volumetric Flow:	1,216	acfm
Barometric Pressure:	25.22	in Hg		Volumetric Flow:	987	dscfm
				Volumetric Flow:	987	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	1739.1	ml	Silica Initial Wt.	904.9	grams
Final Impinger Content:	1734.0	ml	Silica Final Wt.	910.5	grams
Impinger Difference:	-5.1	ml	Silica Difference:	5.6	grams
Total Water Gain:	0.5		Moisture, Bws:	0.000	

Port- Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger	CPM Filter
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F	Exit Temp °F
1-1	8:00:00	3.00	2.07	38.812	86	56	56	254	243	56	73
1-2	8:04:00	2.90	2.00	42.550	87	60	56	251	251	52	72
1-3	8:08:00	2.90	2.00	46.240	90	60	56	251	250	50	72
1-4	8:12:00	2.90	2.00	49.920	89	62	57	250	249	53	76
1-5	8:16:00	2.80	1.93	53.440	90	63	57	251	249	59	77
1-6	8:20:00	2.80	1.93	57.180	91	63	58	248	249	53	77
1-7	8:24:00	2.70	1.86	60.650	92	63	58	250	249	52	75
1-8	8:28:00	2.70	1.86	63.610	93	64	58	252	247	52	74
1-9	8:32:00	2.70	1.86	67.520	92	65	59	248	248	53	74
1-10	8:36:00	2.60	1.79	71.530	91	65	59	249	250	53	73
1-11	8:40:00	2.60	1.79	75.180	90	64	60	250	249	53	74
1-12	8:44:00	2.50	1.72	78.730	89	64	60	250	248	53	74
	8:48:00			82.015							
2-1	8:54:00	3.10	2.14	82.015	90	62	60	253	253	56	79
2-2	8:58:00	3.00	2.07	85.620	88	62	60	248	250	54	74
2-3	9:02:00	3.00	2.07	89.250	89	62	60	248	251	54	74
2-4	9:06:00	2.80	1.93	93.310	90	63	60	250	248	54	74
2-5	9:10:00	2.80	1.93	96.590	90	64	60	251	249	54	74
2-6	9:14:00	2.80	1.93	100.220	91	64	59	248	249	55	78
2-7	9:18:00	2.70	1.86	103.910	88	64	60	249	248	54	78
2-8	9:22:00	2.70	1.86	107.830	88	64	60	247	248	54	78
2-9	9:26:00	2.60	1.79	111.360	87	65	60	250	249	54	78
2-10	9:30:00	2.60	1.79	115.010	87	65	60	248	249	54	79
2-11	9:34:00	2.50	1.72	118.490	87	65	60	251	249	54	79
2-12	9:38:00	2.50	1.72	121.960	87	65	60	248	249	54	79
	9:42:00			125.726							

Total	1:36:00			86.914		63.1	58.9				
Average			1.90		89.3	61.0					
Min			1.72		86.0	56.0					
Max			2.14		93.0	65.0					

### Impinger Weight Sheet - Run 3

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 3 - Air Furnaces  
**Project #:** M231408  
**Date:** 4/25/2023  
**Test Method:** 5/202  
**Weighed/Measured By:** TWM  
**Balance ID:** LV4

**Scale Calibration Check Date:** 4/25/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**

must be within ± 0.5g of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
250	<u>250.0</u>
500	<u>500.0</u>
700	<u>700.1</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
Empty	413.3	412.2	1.1
Empty	647.7	647.4	0.3
DI Water	673.0	679.5	-6.5
Silica Gel	910.5	904.9	5.6

<u>1,734.0</u> <b>Liquid Final</b>	<u>1,739.1</u> <b>Liquid Initial</b>	<u>-5.1</u> <b>Liquid Gain</b>
<u>910.5</u> <b>Silica Final</b>	<u>904.9</u> <b>Silica Initial</b>	<u>5.6</u> <b>Silica Gain</b>

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 4  
**Project #:** M231408  
**Test Method:** 5  
**Test Engineer:** TWM  
**Test Technician:** RB

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
<b>Meter ID:</b>	CM46	CM46	CM46
<b>Pitot ID:</b>	6969	6969	6969
<b>Filter ID:</b>	6554	6779	6563
<b>Filter Pre-Weight (grams):</b>	0.46788	0.46811	0.46605
<b>Nozzle Diameter (Inches):</b>	0.262	0.262	0.262
<b>Meter Calibration Date:</b>	4/18/2023	4/18/2023	4/18/2023
<b>Meter Calibration Factor (Y):</b>	1.001	1.001	1.001
<b>Meter Orifice Setting (Delta H):</b>	1.751	1.751	1.751
<b>Nozzle Kit ID Number and Material:</b>	Quartz 5	Quartz 5	Quartz 5
<b>Pitot Tube Coefficient:</b>		0.840	
<b>Probe Length (Feet):</b>		5.0	
<b>Probe Liner Material:</b>		Glass	
<b>Sample Plane:</b>		Horizontal	
<b>Port Length (Inches):</b>		0.00	
<b>Port Size (Diameter, Inches):</b>		4.00	
<b>Port Type:</b>		Hole in duct	
<b>Duct Shape:</b>		Circular	
<b>Diameter (Feet):</b>		2.5	
<b>Duct Area (Square Feet):</b>		4.909	
<b>Upstream Diameters:</b>		3.7	
<b>Downstream Diameters:</b>		2.0	
<b>Number of Ports Sampled:</b>		2	
<b>Number of Points per Port:</b>		12	
<b>Minutes per Point:</b>		4.0	
<b>Minutes per Reading:</b>		4.0	
<b>Total Number of Traverse Points:</b>		24	
<b>Test Length (Minutes):</b>		96	
<b>Train Type:</b>		Hot Box	
<b>Source Condition:</b>		Normal	
<b>Moisture Balance ID:</b>		LV3	
<b># of Runs</b>		3	

**Method 1 and 2 Cyclonic Flow Check Data**

**Project Number** M231408  
**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Location:** System 4  
**Pitot ID:** 6969  
**Pitot Coefficient:** 0.840  
**Probe Length:** 5

**Source Condition:** Normal  
**Run No.:** 1  
**Date:** 4/26/2023  
**Start Time:** 6:30  
**End Time:** 6:45  
**RM Testers:** TWM  
**Port Length:** 0.00

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)
A	1	0.67	0.8185	65.0	2.0	2.0	B	1	0.73	0.8544	67.0	2.0	2.0
A	2	0.40	0.6325	66.0	2.0	2.0	B	2	0.69	0.8307	68.0	2.0	2.0
A	3	0.36	0.6000	67.0	2.0	2.0	B	3	0.44	0.6633	68.0	2.0	2.0
A	4	0.33	0.5745	67.0	2.0	2.0	B	4	0.34	0.5831	68.0	2.0	2.0
A	5	0.30	0.5477	67.0	2.0	2.0	B	5	0.33	0.5745	68.0	2.0	2.0
A	6	0.26	0.5099	67.0	2.0	2.0	B	6	0.33	0.5745	68.0	2.0	2.0
A	7	0.25	0.5000	67.0	2.0	2.0	B	7	0.34	0.5831	68.0	2.0	2.0
A	8	0.25	0.5000	67.0	2.0	2.0	B	8	0.30	0.5477	68.0	2.0	2.0
A	9	0.25	0.5000	67.0	2.0	2.0	B	9	0.26	0.5099	68.0	2.0	2.0
A	10	0.25	0.5000	67.0	2.0	2.0	B	10	0.26	0.5099	68.0	2.0	2.0
A	11	0.25	0.5000	67.0	2.0	2.0	B	11	0.32	0.5657	68.0	2.0	2.0
A	12	0.25	0.5000	67.0	2.0	2.0	B	12	0.34	0.5831	68.0	2.0	2.0

Average Yaw Angle 2.0 °

Run 1 - Method 5

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 4  
 Source Condition: Normal

Date: 4/26/23  
 Start Time: 7:00  
 End Time: 8:46

DRY GAS METER CONDITIONS				STACK CONDITIONS		
ΔH:	1.80	in. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O
Meter Temperature, T <sub>m</sub> :	57.8	°F		Flue Pressure (Ps):	25.39	in. Hg. abs.
Sqrt ΔP:	0.576	in. H <sub>2</sub> O		Carbon Dioxide:		%
Stack Temperature, T <sub>s</sub> :	69.3	°F		Oxygen:		%
Meter Volume, V <sub>m</sub> :	75.794	ft <sup>3</sup>		Nitrogen:	#VALUE!	%
Meter Volume, V <sub>mstd</sub> :	65.870	dscf		Gas Weight dry, M <sub>d</sub> :	29.000	lb/lb mole
Meter Volume, V <sub>wstd</sub> :	-1.022	wscf		Gas Weight wet, M <sub>s</sub> :	29.173	lb/lb mole
Isokinetic Variance:	101.6	%I		Excess Air:	#VALUE!	%
Test Length:	96.00	in mins.		Gas Velocity, V <sub>s</sub> :	34.982	fps
Nozzle Diameter:	0.262	in inches		Volumetric Flow:	10,303	acfm
Barometric Pressure:	25.34	in Hg		Volumetric Flow:	8,859	dscfm
				Volumetric Flow:	8,721	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	2124.4	ml	Silica Initial Wt.	785.0	grams
Final Impinger Content:	2117.8	ml	Silica Final Wt.	769.9	grams
Impinger Difference:	-6.6	ml	Silica Difference:	-15.1	grams
Total Water Gain:	-21.7		Moisture, Bws:	-0.016	

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	7:00:00	0.79	4.01	2.182	69	45	45	230	253	46
1-2	7:04:00	0.79	4.01	6.620	69	46	46	248	255	51
1-3	7:08:00	0.71	3.61	11.700	69	47	47	255	254	52
1-4	7:12:00	0.65	3.30	16.250	69	48	48	254	253	54
1-5	7:16:00	0.49	2.49	20.590	70	49	49	254	255	56
1-6	7:20:00	0.39	1.98	24.370	70	50	50	253	254	58
1-7	7:24:00	0.20	1.02	27.750	68	51	51	255	254	58
1-8	7:28:00	0.19	0.97	30.170	68	52	52	254	254	58
1-9	7:32:00	0.19	0.97	32.560	67	53	53	253	254	60
1-10	7:36:00	0.19	0.97	34.950	67	54	54	255	255	59
1-11	7:40:00	0.20	1.02	37.380	67	56	56	254	254	60
1-12	7:44:00	0.19	0.97	39.810	67	56	56	254	260	60
	7:48:00			42.208						
2-1	7:58:00	0.47	2.39	42.208	68	61	61	254	253	55
2-2	8:02:00	0.44	2.23	46.010	68	61	61	252	253	56
2-3	8:06:00	0.39	1.98	49.680	69	62	62	253	254	57
2-4	8:10:00	0.33	1.68	53.150	70	63	63	253	253	58
2-5	8:14:00	0.30	1.52	56.340	70	64	64	254	254	52
2-6	8:18:00	0.22	1.12	59.390	70	65	65	253	253	50
2-7	8:22:00	0.22	1.12	62.020	71	65	65	254	254	49
2-8	8:26:00	0.22	1.12	64.630	71	66	66	253	253	50
2-9	8:30:00	0.22	1.12	67.220	72	67	67	254	253	49
2-10	8:34:00	0.23	1.17	69.840	71	68	68	253	254	50
2-11	8:38:00	0.25	1.27	72.520	72	68	68	253	253	49
2-12	8:42:00	0.24	1.22	75.280	72	69	69	254	253	49
	8:46:00			77.976						

Total	1:36:00			75.794		57.8	57.8			
Average			1.80		69.3	57.8				
Min			0.97		67.0	45.0				
Max			4.01		72.0	69.0				

### Impinger Weight Sheet - Run 1

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 4  
**Project #:** M231408  
**Date:** 4/26/2023  
**Test Method:** 5  
**Weighed/Measured By:** TWM  
**Balance ID:** LV3

**Scale Calibration Check Date:** 4/26/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**  
 must be within  $\pm 0.5g$  of certified mass  

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>199.9</u>
500	<u>499.8</u>
700	<u>699.8</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	718.0	725.5	-7.5
DI Water	744.3	744.9	-0.6
Empty	655.5	654.0	1.5
Silica Gel	769.9	785.0	-15.1

<u>2,117.8</u> <b>Liquid Final</b>	<u>2,124.4</u> <b>Liquid Initial</b>	<u>-6.6</u> <b>Liquid Gain</b>
<u>769.9</u> <b>Silica Final</b>	<u>785.0</u> <b>Silica Initial</b>	<u>-15.1</u> <b>Silica Gain</b>



Run 2 - Method 5

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 4  
 Source Condition: Normal

Date: 4/26/23  
 Start Time: 9:15  
 End Time: 10:56

DRY GAS METER CONDITIONS				STACK CONDITIONS		
ΔH:	1.79	In. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O
Meter Temperature, T <sub>m</sub> :	78.7	°F		Flue Pressure (Ps):	25.39	in. Hg. abs.
Sqrt ΔP:	0.588	In. H <sub>2</sub> O		Carbon Dioxide:		%
Stack Temperature, T <sub>s</sub> :	72.9	°F		Oxygen:		%
Meter Volume, V <sub>m</sub> :	79.009	ft <sup>3</sup>		Nitrogen:	#VALUE!	%
Meter Volume, V <sub>mstd</sub> :	65.997	dscf		Gas Weight dry, M <sub>d</sub> :	29.000	lb/lb mole
Meter Volume, V <sub>wstd</sub> :	0.311	wscf		Gas Weight wet, M <sub>s</sub> :	28.948	lb/lb mole
Isokinetic Variance:	101.8	%I		Excess Air:	#VALUE!	%
Test Length:	96.00	in mins.		Gas Velocity, V <sub>s</sub> :	35.952	fps
Nozzle Diameter:	0.262	in inches		Volumetric Flow:	10,589	acfm
Barometric Pressure:	25.34	in Hg		Volumetric Flow:	8,862	dscfm
				Volumetric Flow:	8,904	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	2117.8	ml	Silica Initial Wt.	796.9	grams
Final Impinger Content:	2112.5	ml	Silica Final Wt.	808.8	grams
Impinger Difference:	-5.3	ml	Silica Difference:	11.9	grams
Total Water Gain:	6.6		Moisture, Bws:	0.005	Supersaturation Value, Bws: 0.032

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	9:15:00	0.52	2.56	78.817	75	72	72	253	260	51
1-2	9:19:00	0.48	2.48	82.750	74	72	72	252	258	49
1-3	9:23:00	0.43	2.22	86.780	74	74	74	252	254	52
1-4	9:27:00	0.36	1.86	90.480	73	73	73	252	252	54
1-5	9:31:00	0.34	1.75	93.930	72	74	74	252	252	54
1-6	9:35:00	0.29	1.50	97.260	72	75	75	253	253	54
1-7	9:39:00	0.25	1.29	99.830	71	75	75	252	252	55
1-8	9:43:00	0.27	1.39	102.620	71	76	76	252	252	55
1-9	9:47:00	0.28	1.44	105.510	72	76	76	251	252	55
1-10	9:51:00	0.29	1.50	108.460	72	77	77	252	253	56
1-11	9:55:00	0.28	1.44	111.460	72	78	78	252	252	57
1-12	9:59:00	0.26	1.34	114.420	72	78	78	252	252	57
	10:03:00			117.283						
2-1	10:08:00	0.50	2.47	117.283	73	79	79	253	252	66
2-2	10:12:00	0.61	3.01	121.240	72	79	79	252	252	60
2-3	10:16:00	0.59	2.91	125.630	71	80	80	251	251	60
2-4	10:20:00	0.56	2.76	129.930	72	81	81	252	251	61
2-5	10:24:00	0.51	2.51	134.150	72	82	82	252	251	61
2-6	10:28:00	0.41	2.02	138.180	74	83	83	252	252	60
2-7	10:32:00	0.22	1.08	141.780	74	83	83	252	251	60
2-8	10:36:00	0.21	1.04	144.450	74	84	84	253	252	61
2-9	10:40:00	0.23	1.13	147.020	74	84	84	252	251	62
2-10	10:44:00	0.23	1.13	149.740	74	84	84	252	251	62
2-11	10:48:00	0.23	1.13	152.450	74	84	84	251	252	62
2-12	10:52:00	0.22	1.08	155.150	75	85	85	253	252	61
	10:56:00			157.826						

Total	1:36:00			79.009		78.7	78.7			
Average			1.79		72.9	78.7				
Min			1.04		71.0	72.0				
Max			3.01		75.0	85.0				

### Impinger Weight Sheet - Run 2

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 4  
**Project #:** M231408  
**Date:** 4/26/2023  
**Test Method:** 5  
**Weighed/Measured By:** TWM  
**Balance ID:** LV3

**Scale Calibration Check Date:** 4/26/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**  
 must be within  $\pm 0.5g$  of certified mass  

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>199.9</u>
500	<u>499.8</u>
700	<u>699.8</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	710.2	718.0	-7.8
DI Water	743.8	744.3	-0.5
Empty	658.5	655.5	3.0
Silica Gel	808.8	796.9	11.9

<u>2,112.5</u> <b>Liquid Final</b>	<u>2,117.8</u> <b>Liquid Initial</b>	<u>-5.3</u> <b>Liquid Gain</b>
<u>808.8</u> <b>Silica Final</b>	<u>796.9</u> <b>Silica Initial</b>	<u>11.9</u> <b>Silica Gain</b>

Run 3 - Method 5

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 4  
 Source Condition: Normal

Date: 4/26/23  
 Start Time: 11:15  
 End Time: 12:56

DRY GAS METER CONDITIONS				STACK CONDITIONS		
ΔH:	2.22	In. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O
Meter Temperature, T <sub>m</sub> :	87.3	°F		Flue Pressure (Ps):	25.39	in. Hg. abs.
Sqrt ΔP:	0.647	In. H <sub>2</sub> O		Carbon Dioxide:		%
Stack Temperature, T <sub>s</sub> :	78.4	°F		Oxygen:		%
Meter Volume, V <sub>m</sub> :	87.870	ft <sup>3</sup>		Nitrogen:	#VALUE!	%
Meter Volume, V <sub>mstd</sub> :	72.332	dscf		Gas Weight dry, M <sub>d</sub> :	29.000	lb/lb mole
Meter Volume, V <sub>wstd</sub> :	0.259	wscf		Gas Weight wet, M <sub>s</sub> :	28.961	lb/lb mole
Isokinetic Variance:	101.8	%I		Excess Air:	#VALUE!	%
Test Length:	96.00	in mins.		Gas Velocity, V <sub>s</sub> :	39.743	fps
Nozzle Diameter:	0.262	in inches		Volumetric Flow:	11,705	acfm
Barometric Pressure:	25.34	in Hg		Volumetric Flow:	9,708	dscfm
				Volumetric Flow:	9,742	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	2112.5	ml	Silica Initial Wt.	808.8	grams
Final Impinger Content:	2105.2	ml	Silica Final Wt.	821.6	grams
Impinger Difference:	-7.3	ml	Silica Difference:	12.8	grams
Total Water Gain:	5.5		Moisture, Bws:	0.004	Supersaturation Value, Bws: 0.039

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	11:15:00	0.65	3.33	58.324	76	84	84	248	250	65
1-2	11:19:00	0.88	4.51	62.860	77	85	85	253	259	61
1-3	11:23:00	0.87	4.46	68.150	78	85	85	252	256	60
1-4	11:27:00	0.74	3.80	73.420	78	85	85	251	256	60
1-5	11:31:00	0.60	3.08	78.260	78	86	86	251	255	58
1-6	11:35:00	0.45	2.31	82.650	78	86	86	251	253	56
1-7	11:39:00	0.27	1.38	86.450	78	87	87	251	252	52
1-8	11:43:00	0.29	1.49	89.380	78	87	87	250	252	51
1-9	11:47:00	0.31	1.59	92.420	78	87	87	251	252	50
1-10	11:51:00	0.34	1.74	95.580	78	87	87	252	251	49
1-11	11:55:00	0.33	1.69	98.870	78	87	87	251	251	48
1-12	11:59:00	0.29	1.49	102.120	79	88	88	251	251	48
	12:03:00			105.208						
2-1	12:08:00	0.50	2.56	105.208	78	88	88	251	252	65
2-2	12:12:00	0.48	2.46	109.230	79	88	88	251	251	48
2-3	12:16:00	0.43	2.21	113.160	79	88	88	251	250	47
2-4	12:20:00	0.38	1.95	116.870	79	88	88	251	252	50
2-5	12:24:00	0.36	1.85	120.350	79	88	88	251	252	51
2-6	12:28:00	0.31	1.59	123.760	79	88	88	252	251	50
2-7	12:32:00	0.28	1.44	126.920	79	89	89	252	251	49
2-8	12:36:00	0.31	1.59	129.910	79	89	89	251	251	50
2-9	12:40:00	0.34	1.74	133.060	79	88	88	251	252	51
2-10	12:44:00	0.34	1.74	136.360	79	89	89	251	251	52
2-11	12:48:00	0.34	1.74	139.670	79	89	89	252	251	52
2-12	12:52:00	0.32	1.64	142.990	79	89	89	251	251	52
	12:56:00			146.194						

Total	1:36:00			87.870		87.3	87.3			
Average			2.22		78.4	87.3				
Min			1.38		76.0	84.0				
Max			4.51		79.0	89.0				

**Impinger Weight Sheet - Run 3**

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 4  
 Project #: M231408  
 Date: 4/26/2023  
 Test Method: 5  
 Weighed/Measured By: TWM  
 Balance ID: LV3

Scale Calibration Check Date: 4/26/2023  
Scale Calibration Check (see QS-6.05C for procedure)  
 must be within ± 0.5g of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>199.9</u>
500	<u>499.8</u>
700	<u>699.8</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	702.0	710.2	-8.2
DI Water	742.0	743.8	-1.8
Empty	661.2	658.5	2.7
Silica Gel	821.6	808.8	12.8

<u>2,105.2</u> <b>Liquid Final</b>	<u>2,112.5</u> <b>Liquid Initial</b>	<u>-7.3</u> <b>Liquid Gain</b>
<u>821.6</u> <b>Silica Final</b>	<u>808.8</u> <b>Silica Initial</b>	<u>12.8</u> <b>Silica Gain</b>

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 5  
**Project #:** M231408  
**Test Method:** 5  
**Test Engineer:** TWM  
**Test Technician:** RB

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
<b>Meter ID:</b>	CM46	CM46	CM46
<b>Pitot ID:</b>	6969	6969	6969
<b>Filter ID:</b>	6555	8385	8373
<b>Filter Pre-Weight (grams):</b>	0.46347	0.44546	0.44560
<b>Nozzle Diameter (Inches):</b>	0.357	0.357	0.357
<b>Meter Calibration Date:</b>	4/18/2023	4/18/2023	4/18/2023
<b>Meter Calibration Factor (Y):</b>	1.001	1.001	1.001
<b>Meter Orifice Setting (Delta H):</b>	1.751	1.751	1.751
<b>Nozzle Kit ID Number and Material:</b>	Glass 10 (1048)	Glass 10 (1048)	Glass 10 (1048)
<b>Pitot Tube Coefficient:</b>		0.840	
<b>Probe Length (Feet):</b>		5.0	
<b>Probe Liner Material:</b>		Glass	
<b>Sample Plane:</b>		Horizontal	
<b>Port Length (Inches):</b>		0.00	
<b>Port Size (Diameter, Inches):</b>		4.00	
<b>Port Type:</b>		Hole in duct	
<b>Duct Shape:</b>		Circular	
<b>Diameter (Feet):</b>		2.5	
<b>Duct Area (Square Feet):</b>		4.909	
<b>Upstream Diameters:</b>		2.0	
<b>Downstream Diameters:</b>		2.0	
<b>Number of Ports Sampled:</b>		2	
<b>Number of Points per Port:</b>		12	
<b>Minutes per Point:</b>		4.0	
<b>Minutes per Reading:</b>		4.0	
<b>Total Number of Traverse Points:</b>		24	
<b>Test Length (Minutes):</b>		96	
<b>Train Type:</b>		Hot Box	
<b>Source Condition:</b>		Normal	
<b>Moisture Balance ID:</b>		LV3	
<b># of Runs</b>		3	

**Method 1 and 2 Cyclonic Flow Check Data**

**Project Number** M231408  
**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Location:** System 5  
**Pitot ID:** 6969  
**Pitot Coefficient:** 0.840  
**Probe Length:** 5

**Source Condition:** Normal  
**Run No.:** 1  
**Date:** 4/27/2023  
**Start Time:** 6:50  
**End Time:** 7:05  
**RM Testers:**  
**Port Length:** 0.00

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)
A	1	0.22	0.4690	73.0	2.0	28.76	B	1	0.22	0.4690	74.0	2.0	28.79
A	2	0.22	0.4690	73.0	2.0	28.76	B	2	0.24	0.4899	74.0	2.0	30.07
A	3	0.22	0.4690	74.0	2.0	28.79	B	3	0.25	0.5000	74.0	2.0	30.69
A	4	0.22	0.4690	74.0	2.0	28.79	B	4	0.22	0.4690	74.0	2.0	28.79
A	5	0.20	0.4472	74.0	2.0	27.45	B	5	0.20	0.4472	74.0	2.0	27.45
A	6	0.18	0.4243	74.0	2.0	26.04	B	6	0.19	0.4359	74.0	2.0	26.75
A	7	0.14	0.3742	74.0	2.0	22.97	B	7	0.15	0.3873	74.0	2.0	23.77
A	8	0.13	0.3606	74.0	2.0	22.13	B	8	0.13	0.3606	74.0	2.0	22.13
A	9	0.14	0.3742	74.0	2.0	22.97	B	9	0.14	0.3742	74.0	2.0	22.97
A	10	0.15	0.3873	74.0	2.0	23.77	B	10	0.14	0.3742	74.0	2.0	22.97
A	11	0.14	0.3742	74.0	2.0	22.97	B	11	0.14	0.3742	74.0	2.0	22.97
A	12	0.13	0.3606	74.0	2.0	22.13	B	12	0.12	0.3464	72.0	2.0	21.22

**Average Yaw Angle** 2.0 °

Run 1 - Method 5

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 5  
 Source Condition: Normal

Date: 4/27/23  
 Start Time: 7:10  
 End Time: 8:50

DRY GAS METER CONDITIONS				STACK CONDITIONS		
ΔH:	2.68	in. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O
Meter Temperature, T <sub>m</sub> :	59.6	°F		Flue Pressure (Ps):	25.35	in. Hg. abs.
Sqrt ΔP:	0.391	in. H <sub>2</sub> O		Carbon Dioxide:		%
Stack Temperature, T <sub>s</sub> :	75.6	°F		Oxygen:		%
Meter Volume, V <sub>m</sub> :	93.209	ft <sup>3</sup>		Nitrogen:	#VALUE!	%
Meter Volume, V <sub>mstd</sub> :	80.788	dscf		Gas Weight dry, M <sub>d</sub> :	29.000	lb/lb mole
Meter Volume, V <sub>wstd</sub> :	0.628	wscf		Gas Weight wet, M <sub>s</sub> :	28.915	lb/lb mole
Isokinetic Variance:	101.5	%I		Excess Air:	#VALUE!	%
Test Length:	96.00	in mins.		Gas Velocity, V <sub>s</sub> :	23.997	fps
Nozzle Diameter:	0.357	in inches		Volumetric Flow:	7,068	acfm
Barometric Pressure:	25.30	in Hg		Volumetric Flow:	5,857	dscfm
				Volumetric Flow:	5,903	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	2105.2	ml	Silica Initial Wt.	821.6	grams
Final Impinger Content:	2114.4	ml	Silica Final Wt.	825.7	grams
Impinger Difference:	9.2	ml	Silica Difference:	4.1	grams
Total Water Gain:	13.3		Moisture, Bws:	0.008	Supersaturation Value, Bws: 0.035

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	7:10:00	0.22	3.68	46.839	72	46	46	263	264	48
1-2	7:14:00	0.24	4.02	51.380	72	47	47	244	257	40
1-3	7:18:00	0.25	4.19	56.150	74	47	47	242	258	41
1-4	7:22:00	0.24	4.02	60.990	74	48	48	245	257	41
1-5	7:26:00	0.23	3.85	65.770	74	50	50	254	254	41
1-6	7:30:00	0.18	3.01	70.460	74	51	51	254	253	41
1-7	7:34:00	0.15	2.51	74.630	74	53	53	254	254	43
1-8	7:38:00	0.11	1.84	78.470	74	54	54	252	254	44
1-9	7:42:00	0.12	2.01	81.780	74	55	55	254	254	44
1-10	7:46:00	0.13	2.18	85.180	75	56	56	254	254	44
1-11	7:50:00	0.11	1.84	88.740	75	57	57	254	254	45
1-12	7:54:00	0.10	1.67	92.060	76	59	59	254	254	46
	7:58:00			95.165						
2-1	8:02:00	0.20	3.35	95.165	76	60	60	252	255	52
2-2	8:06:00	0.22	3.68	99.620	76	62	62	254	254	44
2-3	8:10:00	0.22	3.68	104.240	77	63	63	254	254	45
2-4	8:14:00	0.22	3.68	108.990	76	65	65	254	255	45
2-5	8:18:00	0.22	3.68	113.730	76	66	66	253	254	45
2-6	8:22:00	0.18	3.01	118.410	77	67	67	254	254	46
2-7	8:26:00	0.13	2.18	122.690	77	68	68	252	253	45
2-8	8:30:00	0.08	1.34	126.360	78	70	70	254	253	46
2-9	8:34:00	0.09	1.51	129.220	78	70	70	254	253	46
2-10	8:38:00	0.09	1.51	132.260	78	72	72	253	253	47
2-11	8:42:00	0.07	1.17	135.330	78	72	72	253	253	47
2-12	8:46:00	0.04	0.67	138.040	80	73	73	254	254	48
	8:50:00			140.048						

Total	1:36:00			93.209		59.6	59.6			
Average			2.68		75.6	59.6				
Min			0.67		72.0	46.0				
Max			4.19		80.0	73.0				

### Impinger Weight Sheet - Run 1

**Client:** PCC Structural  
**Facility:** Carson City Facility  
**Test Location:** System 5  
**Project #:** M231408  
**Date:** 4/27/2023  
**Test Method:** 5  
**Weighed/Measured By:** TWM  
**Balance ID:** LV3

**Scale Calibration Check Date:** 4/27/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**  
 must be within  $\pm 0.5g$  of certified mass  

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>199.9</u>
500	<u>499.9</u>
700	<u>699.8</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	710.1	702.0	8.1
DI Water	742.8	742.0	0.8
Empty	661.5	661.2	0.3
Silica Gel	825.7	821.6	4.1

<u>2,114.4</u> <b>Liquid Final</b>	<u>2,105.2</u> <b>Liquid Initial</b>	<u>9.2</u> <b>Liquid Gain</b>
<u>825.7</u> <b>Silica Final</b>	<u>821.6</u> <b>Silica Initial</b>	<u>4.1</u> <b>Silica Gain</b>



Run 2 - Method 5

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 5  
 Source Condition: Normal

Date: 4/27/23  
 Start Time: 9:12  
 End Time: 10:58

DRY GAS METER CONDITIONS				STACK CONDITIONS		
ΔH:	3.24	In. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O
Meter Temperature, T <sub>m</sub> :	82.1	°F		Flue Pressure (Ps):	25.35	in. Hg. abs.
Sqrt ΔP:	0.434	In. H <sub>2</sub> O		Carbon Dioxide:		%
Stack Temperature, T <sub>s</sub> :	80.3	°F		Oxygen:		%
Meter Volume, V <sub>m</sub> :	107.635	ft <sup>3</sup>		Nitrogen:	#VALUE!	%
Meter Volume, V <sub>mstd</sub> :	89.572	dscf		Gas Weight dry, M <sub>d</sub> :	29.000	lb/lb mole
Meter Volume, V <sub>wstd</sub> :	0.841	wscf		Gas Weight wet, M <sub>s</sub> :	28.898	lb/lb mole
Isokinetic Variance:	102.0	%I		Excess Air:	#VALUE!	%
Test Length:	96.00	in mins.		Gas Velocity, V <sub>s</sub> :	26.752	fps
Nozzle Diameter:	0.357	in inches		Volumetric Flow:	7,879	acfm
Barometric Pressure:	25.30	in Hg		Volumetric Flow:	6,463	dscfm
				Volumetric Flow:	6,524	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	2114.4	ml	Silica Initial Wt.	875.5	grams
Final Impinger Content:	2121.5	ml	Silica Final Wt.	886.3	grams
Impinger Difference:	7.1	ml	Silica Difference:	10.8	grams
Total Water Gain:	17.9		Moisture, Bws:	0.009	Supersaturation Value, Bws: 0.041

Port-Point No.	Clock Time	Velocity		Actual Meter Vol. ft <sup>3</sup>	Stack Temp °F		Meter Temp °F		Probe Temp °F	Filter Exit Temp °F	Impinger Exit Temp °F
		Head Δp in. H <sub>2</sub> O	Orifice ΔH in. H <sub>2</sub> O		Inlet °F	Outlet °F					
1-1	9:12:00	0.20	3.35	40.109	79	77	77	240	263	51	
1-2	9:16:00	0.18	3.01	44.710	80	77	77	253	257	48	
1-3	9:20:00	0.22	3.68	48.930	80	78	78	252	253	50	
1-4	9:24:00	0.22	3.68	53.450	80	78	78	252	252	51	
1-5	9:28:00	0.05	0.84	58.670	74	80	80	252	251	50	
1-6	9:32:00	0.05	0.84	61.040	74	80	80	252	252	50	
1-7	9:36:00	0.24	4.02	63.310	81	80	80	251	253	50	
1-8	9:40:00	0.23	3.85	68.350	81	81	81	251	251	50	
1-9	9:44:00	0.23	3.85	73.290	80	81	81	251	252	51	
1-10	9:48:00	0.22	3.68	78.240	80	81	81	251	252	52	
1-11	9:52:00	0.20	3.35	83.120	80	82	82	251	252	52	
1-12	9:56:00	0.20	3.35	87.710	80	82	82	252	251	52	
	10:00:00			92.335							
2-1	10:10:00	0.22	3.68	92.335	80	83	83	251	251	55	
2-2	10:14:00	0.23	3.85	97.210	81	83	83	250	252	48	
2-3	10:18:00	0.25	4.19	102.150	81	83	83	250	251	51	
2-4	10:22:00	0.24	4.02	107.320	81	83	83	251	251	51	
2-5	10:26:00	0.24	4.02	112.400	81	84	84	251	251	52	
2-6	10:30:00	0.23	3.85	117.440	81	84	84	251	251	52	
2-7	10:34:00	0.22	3.68	122.420	81	85	85	253	251	52	
2-8	10:38:00	0.20	3.35	127.270	81	85	85	251	251	52	
2-9	10:42:00	0.19	3.18	131.930	82	85	85	252	251	52	
2-10	10:46:00	0.14	2.34	136.420	82	86	86	251	252	52	
2-11	10:50:00	0.13	2.18	140.370	83	86	86	251	252	52	
2-12	10:54:00	0.12	2.01	144.120	84	86	86	252	252	52	
	10:58:00			147.744							

Total	1:36:00			107.635		82.1	82.1			
Average			3.24		80.3	82.1				
Min			0.84		74.0	77.0				
Max			4.19		84.0	86.0				

### Impinger Weight Sheet - Run 2

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 5  
**Project #:** M231408  
**Date:** 4/27/2023  
**Test Method:** 5  
**Weighed/Measured By:** TWM  
**Balance ID:** LV3

**Scale Calibration Check Date:** 4/27/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**  
 must be within  $\pm 0.5g$  of certified mass  

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>199.9</u>
500	<u>499.9</u>
700	<u>699.8</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	716.4	710.1	6.3
DI Water	743.1	742.8	0.3
Empty	662.0	661.5	0.5
Silica Gel	886.3	875.5	10.8

<u>2,121.5</u> <b>Liquid Final</b>	<u>2,114.4</u> <b>Liquid Initial</b>	<u>7.1</u> <b>Liquid Gain</b>
<u>886.3</u> <b>Silica Final</b>	<u>875.5</u> <b>Silica Initial</b>	<u>10.8</u> <b>Silica Gain</b>

Run 3 - Method 5

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 5  
 Source Condition: Normal

Date: 4/27/23  
 Start Time: 11:20  
 End Time: 13:06

DRY GAS METER CONDITIONS				STACK CONDITIONS		
ΔH:	2.80	In. H <sub>2</sub> O		Static Pressure	0.70	in. H <sub>2</sub> O
Meter Temperature, T <sub>m</sub> :	91.6	°F		Flue Pressure (Ps):	25.35	in. Hg. abs.
Sqrt ΔP:	0.403	In. H <sub>2</sub> O		Carbon Dioxide:		%
Stack Temperature, T <sub>s</sub> :	85.4	°F		Oxygen:		%
Meter Volume, V <sub>m</sub> :	101.320	ft <sup>3</sup>		Nitrogen:	#VALUE!	%
Meter Volume, V <sub>mstd</sub> :	82.758	dscf		Gas Weight dry, M <sub>d</sub> :	29.000	lb/lb mole
Meter Volume, V <sub>wstd</sub> :	0.777	wscf		Gas Weight wet, M <sub>s</sub> :	28.898	lb/lb mole
Isokinetic Variance:	102.0	%I		Excess Air:	#VALUE!	%
Test Length:	96.00	in mins.		Gas Velocity, V <sub>s</sub> :	24.944	fps
Nozzle Diameter:	0.357	in inches		Volumetric Flow:	7,347	acfm
Barometric Pressure:	25.30	in Hg		Volumetric Flow:	5,970	dscfm
				Volumetric Flow:	6,026	scfm

MOISTURE DETERMINATION

Initial Impinger Content:	2121.5	ml	Silica Initial Wt.	886.3	grams
Final Impinger Content:	2128.2	ml	Silica Final Wt.	896.1	grams
Impinger Difference:	6.7	ml	Silica Difference:	9.8	grams
Total Water Gain:	16.5		Moisture, Bws:	0.009	Supersaturation Value, Bws: 0.048

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	11:20:00	0.20	3.35	48.104	85	88	88	254	254	60
1-2	11:24:00	0.20	3.35	52.750	86	88	88	250	252	54
1-3	11:28:00	0.19	3.18	57.410	86	88	88	251	261	56
1-4	11:32:00	0.10	1.67	61.920	86	88	88	251	253	56
1-5	11:36:00	0.10	1.67	65.220	86	89	89	247	252	56
1-6	11:40:00	0.08	1.34	68.480	85	89	89	250	252	57
1-7	11:44:00	0.12	2.01	71.450	85	89	89	251	251	57
1-8	11:48:00	0.11	1.84	75.080	84	90	90	251	252	57
1-9	11:52:00	0.10	1.67	78.550	84	90	90	251	250	57
1-10	11:56:00	0.10	1.67	81.930	83	91	91	252	252	57
1-11	12:00:00	0.11	1.84	85.210	84	91	91	252	251	58
1-12	12:04:00	0.11	1.84	88.690	83	92	92	251	251	58
	12:08:00			92.179						
2-1	12:18:00	0.25	4.19	92.179	87	93	93	250	251	62
2-2	12:22:00	0.24	4.02	97.450	86	93	93	251	251	60
2-3	12:26:00	0.24	4.02	102.570	86	93	93	252	250	60
2-4	12:30:00	0.23	3.85	107.730	86	93	93	251	251	60
2-5	12:34:00	0.24	4.02	112.760	86	93	93	250	251	60
2-6	12:38:00	0.23	3.85	117.920	86	94	94	252	251	61
2-7	12:42:00	0.22	3.68	122.950	85	94	94	250	251	60
2-8	12:46:00	0.20	3.35	127.880	86	94	94	251	251	61
2-9	12:50:00	0.19	3.18	132.590	86	94	94	252	252	61
2-10	12:54:00	0.16	2.68	137.220	86	94	94	251	252	62
2-11	12:58:00	0.15	2.51	141.390	86	95	95	252	251	62
2-12	13:02:00	0.14	2.34	145.480	86	95	95	251	251	62
	13:06:00			149.424						

Total	1:36:00			101.320		91.6	91.6			
Average			2.80		85.4	91.6				
Min			1.34		83.0	88.0				
Max			4.19		87.0	95.0				

### Impinger Weight Sheet - Run 3

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 5  
**Project #:** M231408  
**Date:** 4/27/2023  
**Test Method:** 5  
**Weighed/Measured By:** TWM  
**Balance ID:** LV3

**Scale Calibration Check Date:** 4/27/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**  
 must be within  $\pm 0.5g$  of certified mass  

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>199.9</u>
500	<u>499.9</u>
700	<u>699.8</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	722.2	716.4	5.8
DI Water	743.4	743.1	0.3
Empty	662.6	662.0	0.6
Silica Gel	896.1	886.3	9.8

<u>2,128.2</u> <b>Liquid Final</b>	<u>2,121.5</u> <b>Liquid Initial</b>	<u>6.7</u> <b>Liquid Gain</b>
<u>896.1</u> <b>Silica Final</b>	<u>886.3</u> <b>Silica Initial</b>	<u>9.8</u> <b>Silica Gain</b>

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 7  
**Project #:** M231408  
**Test Method:** 5/202  
**Test Engineer:** AMS  
**Test Technician:** RODS

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
<b>Temp ID:</b>	CM45	CM45	CM45
<b>Meter ID:</b>	CM45	CM45	CM45
<b>Pitot ID:</b>	3002	3002	3002
<b>Filter ID:</b>	8386	8375	8372
<b>Filter Pre-Weight (grams):</b>	0.44483	0.44624	0.44053
<b>Nozzle Diameter (Inches):</b>	0.345	0.345	0.345
<b>Meter Calibration Date:</b>	4/18/2023	4/18/2023	4/18/2023
<b>Meter Calibration Factor (Y):</b>	0.999	0.999	0.999
<b>Meter Orifice Setting (Delta H):</b>	1.687	1.687	1.687
<b>Nozzle Kit ID Number and Material:</b>	Quartz #5 (#108)	Quartz #5 (#108)	Quartz #5 (#108)
<b>Pitot Tube Coefficient:</b>		0.840	
<b>Probe Length (Feet):</b>		3.0	
<b>Probe Liner Material:</b>		Quartz	
<b>Sample Plane:</b>		Horizontal	
<b>Port Length (Inches):</b>		0.00	
<b>Port Size (Diameter, Inches):</b>		2.00	
<b>Port Type:</b>		Hole in duct	
<b>Duct Shape:</b>		Rectangular	
<b>Length (Feet):</b>		1.416	
<b>Width (Feet):</b>		2.083	
<b>Duct Area (Square Feet):</b>		2.950	
<b>Equivalent Diameter Rectangular Duct (Feet):</b>		1.686	
<b>Upstream Diameters:</b>		3.8	
<b>Downstream Diameters:</b>		2.5	
<b>Number of Ports Sampled:</b>		5	
<b>Number of Points per Port:</b>		5	
<b>Minutes per Point:</b>		4.0	
<b>Minutes per Reading:</b>		4.0	
<b>Total Number of Traverse Points:</b>		25	
<b>Test Length (Minutes):</b>		100	
<b>Train Type:</b>		Anderson Box	
<b>Source Condition:</b>		Normal	
<b>Diluent Model/Serial Number:</b>		NA	
<b>Moisture Balance ID:</b>		LV4	
<b># of Runs</b>		3	

**Method 1 and 2 Cyclonic Flow Check Data**

**Project Number** M231408  
**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Location:** System 7  
**Pitot ID:** 3002  
**Pitot Coefficient:** 0.840  
**Probe Length:** 3

**Source Condition:** Normal  
**Run No.:** 1  
**Date:** 4/27/2023  
**Start Time:** 5:55  
**End Time:** 6:10  
**RM Testers:** AMS/RODS  
**Port Length:** 0.00

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)
A	1	0.13	0.3606	65.0	0.0	22.04	C	5	0.13	0.3606	65.0	0.0	22.04
A	2	0.14	0.3742	65.0	1.0	22.88	D	1	0.15	0.3873	65.0	0.0	23.68
A	3	0.15	0.3873	65.0	2.0	23.68	D	2	0.15	0.3873	65.0	1.0	23.68
A	4	0.13	0.3606	65.0	2.0	22.04	D	3	0.15	0.3873	65.0	2.0	23.68
A	5	0.13	0.3606	65.0	1.0	22.04	D	4	0.15	0.3873	65.0	0.0	23.68
B	1	0.14	0.3742	65.0	1.0	22.88	D	5	0.14	0.3742	65.0	2.0	22.88
B	2	0.15	0.3873	65.0	1.0	23.68	E	1	0.13	0.3606	65.0	1.0	22.04
B	3	0.15	0.3873	65.0	2.0	23.68	E	2	0.14	0.3742	65.0	2.0	22.88
B	4	0.14	0.3742	65.0	0.0	22.88	E	3	0.15	0.3873	65.0	1.0	23.68
B	5	0.14	0.3742	65.0	2.0	22.88	E	4	0.14	0.3742	65.0	1.0	22.88
C	1	0.14	0.3742	65.0	2.0	22.88	E	5	0.13	0.3606	65.0	2.0	22.04
C	2	0.15	0.3873	65.0	3.0	23.68							
C	3	0.16	0.4000	65.0	1.0	24.46							
C	4	0.14	0.3742	65.0	0.0	22.88							

**Average Yaw Angle** 1.2 °

Run 1 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 7  
 Source Condition: Normal

Date: 4/27/23  
 Start Time: 6:20  
 End Time: 8:05

DRY GAS METER CONDITIONS				STACK CONDITIONS			
ΔH:	2.07	in. H <sub>2</sub> O		Static Pressure	0.10	in. H <sub>2</sub> O	
Meter Temperature, Tm:	51.2	°F		Flue Pressure (Ps):	25.31	in. Hg. abs.	
Sqrt ΔP:	0.378	in. H <sub>2</sub> O		Carbon Dioxide:		%	
Stack Temperature, Ts:	66.8	°F		Oxygen:		%	
Meter Volume, Vm:	86.534	ft <sup>3</sup>		Nitrogen:	#VALUE!	%	
Meter Volume, Vmstd:	75.958	dscf		Gas Weight dry, Md:	29.000	lb/lb mole	
Meter Volume, Vwstd:	1.733	wscf		Gas Weight wet, Ms:	28.755	lb/lb mole	
Isokinetic Variance:	102.0	%I		Excess Air:	#VALUE!	%	
Test Length:	100.00	in mins.		Gas Velocity, Vs:	23.082	fps	
Nozzle Diameter:	0.345	in inches		Volumetric Flow:	4,085	acfm	
Barometric Pressure:	25.30	in Hg		Volumetric Flow:	3,385	dscfm	
				Volumetric Flow:	3,463	scfm	

MOISTURE DETERMINATION

Initial Impinger Content:	2184.5	ml	Silica Initial Wt.	876.8	grams
Final Impinger Content:	2216.8	ml	Silica Final Wt.	881.3	grams
Impinger Difference:	32.3	ml	Silica Difference:	4.5	grams
Total Water Gain:	36.8		Moisture, Bws:	0.022	Supersaturation Value, Bws: 0.026

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	6:20:00	0.14	2.03	86.088	65	46	46	250	250	59
1-2	6:24:00	0.14	2.03	89.500	65	46	46	249	251	54
1-3	6:28:00	0.15	2.17	92.900	65	47	47	248	251	53
1-4	6:32:00	0.14	2.03	96.420	65	47	47	249	250	53
1-5	6:36:00	0.13	1.88	99.825	65	48	48	250	251	53
	6:40:00			103.111						
2-1	6:42:00	0.14	2.03	103.111	65	48	48	251	251	57
2-2	6:46:00	0.15	2.17	106.525	66	49	49	249	249	54
2-3	6:50:00	0.15	2.17	110.050	66	50	50	250	249	54
2-4	6:54:00	0.15	2.17	113.600	66	50	50	250	250	54
2-5	6:58:00	0.14	2.03	117.150	66	50	50	250	249	54
	7:02:00			120.574						
3-1	7:03:00	0.14	2.03	120.574	67	51	51	248	247	58
3-2	7:07:00	0.15	2.17	124.150	67	51	51	249	252	54
3-3	7:11:00	0.16	2.32	127.550	67	52	52	250	249	53
3-4	7:15:00	0.15	2.17	131.225	67	52	52	248	250	53
3-5	7:19:00	0.14	2.03	134.775	67	52	52	251	251	53
	7:23:00			138.202						
4-1	7:24:00	0.14	2.03	138.202	67	53	53	248	250	57
4-2	7:28:00	0.15	2.17	141.650	68	53	53	250	249	53
4-3	7:32:00	0.15	2.17	145.200	67	53	53	250	250	54
4-4	7:36:00	0.14	2.03	148.750	67	54	54	251	249	53
4-5	7:40:00	0.14	2.03	152.200	68	54	54	252	251	53
	7:44:00			155.653						
5-1	7:45:00	0.13	1.88	155.653	68	54	54	251	250	58
5-2	7:49:00	0.14	2.03	158.975	69	54	54	249	251	54
5-3	7:53:00	0.15	2.17	162.420	69	55	55	250	248	53
5-4	7:57:00	0.13	1.88	165.975	69	55	55	248	251	53
5-5	8:01:00	0.13	1.88	169.300	70	55	55	251	251	54
	8:05:00			172.622						

Total	1:40:00			86.534		51.2	51.2			
Average			2.07		66.8			51.2		
Min			1.88		65.0		46.0			
Max			2.32		70.0		55.0			

**Impinger Weight Sheet - Run 1**

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 7  
 Project #: M231408  
 Date: 4/27/2023  
 Test Method: 5/202  
 Weighed/Measured By: AMS  
 Balance ID: LV4

Scale Calibration Check Date: 4/27/2023  
Scale Calibration Check (see QS-6.05C for procedure)  
 must be within  $\pm 0.5g$  of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.1</u>
700	<u>700.1</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	778.9	758.2	20.7
DI Water	811.1	800.4	10.7
Empty	626.8	625.9	0.9
Silica Gel	881.3	876.8	4.5

<u>2,216.8</u> Liquid Final	<u>2,184.5</u> Liquid Initial	<u>32.3</u> Liquid Gain
<u>881.3</u> Silica Final	<u>876.8</u> Silica Initial	<u>4.5</u> Silica Gain



Run 2 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 7  
 Source Condition: Normal

Date: 4/27/23  
 Start Time: 8:28  
 End Time: 10:12

DRY GAS METER CONDITIONS				STACK CONDITIONS			
ΔH:	2.06	In. H <sub>2</sub> O		Static Pressure	0.10	in. H <sub>2</sub> O	
Meter Temperature, Tm:	61.5	°F		Flue Pressure (Ps):	25.31	in. Hg. abs.	
Sqrt ΔP:	0.377	In. H <sub>2</sub> O		Carbon Dioxide:		%	
Stack Temperature, Ts:	75.7	°F		Oxygen:		%	
Meter Volume, Vm:	87.435	ft <sup>3</sup>		Nitrogen:	#VALUE!	%	
Meter Volume, Vmstd:	75.229	dscf		Gas Weight dry, Md:	29.000	lb/lb mole	
Meter Volume, Vwstd:	1.677	wscf		Gas Weight wet, Ms:	28.760	lb/lb mole	
Isokinetic Variance:	102.0	%		Excess Air:	#VALUE!	%	
Test Length:	100.00	in mins.		Gas Velocity, Vs:	23.242	fps	
Nozzle Diameter:	0.345	in inches		Volumetric Flow:	4,113	acfm	
Barometric Pressure:	25.30	in Hg		Volumetric Flow:	3,354	dscfm	
				Volumetric Flow:	3,429	scfm	

MOISTURE DETERMINATION

Initial Impinger Content:	2216.8	ml	Silica Initial Wt.	881.3	grams
Final Impinger Content:	2247.5	ml	Silica Final Wt.	886.2	grams
Impinger Difference:	30.7	ml	Silica Difference:	4.9	grams
Total Water Gain:	35.6		Moisture, Bws:	0.022	Supersaturation Value, Bws: 0.035

Port-Point No.	Clock Time	Velocity	Orifice	Actual Meter Vol. ft <sup>3</sup>	Stack Temp °F	Meter Temp		Probe Temp °F	Filter Exit Temp °F	Impinger Exit Temp °F
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O			Inlet °F	Outlet °F			
1-1	8:28:00	0.13	1.88	74.394	72	56	56	242	245	63
1-2	8:32:00	0.14	2.03	77.725	73	56	56	251	253	49
1-3	8:36:00	0.15	2.17	81.150	73	57	57	249	249	52
1-4	8:40:00	0.14	2.03	84.725	73	57	57	249	250	52
1-5	8:44:00	0.13	1.88	88.175	73	58	58	248	250	53
	8:48:00			91.499						
2-1	8:49:00	0.14	2.03	91.499	74	58	58	251	250	56
2-2	8:53:00	0.15	2.17	94.950	74	59	59	250	248	54
2-3	8:57:00	0.15	2.17	98.525	74	59	59	250	250	53
2-4	9:01:00	0.14	2.03	102.100	75	60	60	251	251	53
2-5	9:05:00	0.14	2.03	105.575	75	60	60	249	251	53
	9:09:00			109.033						
3-1	9:10:00	0.14	2.03	109.033	75	60	60	250	251	55
3-2	9:14:00	0.15	2.17	112.500	76	61	61	253	251	53
3-3	9:18:00	0.16	2.32	116.075	76	61	61	250	250	54
3-4	9:22:00	0.15	2.17	119.775	77	62	62	248	250	55
3-5	9:26:00	0.14	2.03	123.375	77	63	63	252	250	54
	9:30:00			126.848						
4-1	9:31:00	0.14	2.03	126.848	77	63	63	250	250	57
4-2	9:35:00	0.14	2.03	130.325	77	64	64	250	251	54
4-3	9:39:00	0.15	2.17	133.800	77	64	64	251	248	54
4-4	9:43:00	0.15	2.17	137.400	77	65	65	250	249	54
4-5	9:47:00	0.14	2.03	141.020	78	65	65	250	251	55
	9:51:00			144.505						
5-1	9:52:00	0.13	1.88	144.505	78	65	65	252	250	58
5-2	9:56:00	0.14	2.03	147.875	78	66	66	251	248	54
5-3	10:00:00	0.14	2.03	151.350	78	66	66	248	249	55
5-4	10:04:00	0.14	2.03	154.850	78	66	66	249	249	55
5-5	10:08:00	0.14	2.03	158.325	78	66	66	252	250	55
	10:12:00			161.829						

Total	1:40:00			87.435		61.5	61.5			
Average			2.06		75.7	61.5				
Min			1.88		72.0	56.0				
Max			2.32		78.0	66.0				

### Impinger Weight Sheet - Run 2

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 7  
**Project #:** M231408  
**Date:** 4/27/2023  
**Test Method:** 5/202  
**Weighed/Measured By:** AMS  
**Balance ID:** LV4

**Scale Calibration Check Date:** 4/27/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**  
 must be within  $\pm 0.5g$  of certified mass  

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	200.0
500	500.1
700	700.1

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	799.3	778.9	20.4
DI Water	820.8	811.1	9.7
Empty	627.4	626.8	0.6
Silica Gel	886.2	881.3	4.9

2,247.5	2,216.8	30.7
<b>Liquid Final</b>	<b>Liquid Initial</b>	<b>Liquid Gain</b>
886.2	881.3	4.9
<b>Silica Final</b>	<b>Silica Initial</b>	<b>Silica Gain</b>

Run 3 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 7  
 Source Condition: Normal

Date: 4/27/23  
 Start Time: 10:30  
 End Time: 12:14

DRY GAS METER CONDITIONS				STACK CONDITIONS			
ΔH:	2.07	In. H <sub>2</sub> O		Static Pressure	0.10	in. H <sub>2</sub> O	
Meter Temperature, Tm:	73.6	°F		Flue Pressure (Ps):	25.31	in. Hg. abs.	
Sqrt ΔP:	0.378	In. H <sub>2</sub> O		Carbon Dioxide:		%	
Stack Temperature, Ts:	85.1	°F		Oxygen:		%	
Meter Volume, Vm:	88.822	ft <sup>3</sup>		Nitrogen:	#VALUE!	%	
Meter Volume, Vmstd:	74.682	dscf		Gas Weight dry, Md:	29.000	lb/lb mole	
Meter Volume, Vwstd:	1.625	wscf		Gas Weight wet, Ms:	28.766	lb/lb mole	
Isokinetic Variance:	101.9	%		Excess Air:	#VALUE!	%	
Test Length:	100.00	in mins.		Gas Velocity, Vs:	23.477	fps	
Nozzle Diameter:	0.345	in inches		Volumetric Flow:	4,155	acfm	
Barometric Pressure:	25.30	in Hg		Volumetric Flow:	3,331	dscfm	
				Volumetric Flow:	3,404	scfm	

MOISTURE DETERMINATION

Initial Impinger Content:	2247.5	ml	Silica Initial Wt.	886.2	grams
Final Impinger Content:	2278.1	ml	Silica Final Wt.	890.1	grams
Impinger Difference:	30.6	ml	Silica Difference:	3.9	grams
Total Water Gain:	34.5		Moisture, Bws:	0.021	Supersaturation Value, Bws: 0.048

Port-Point No.	Clock Time	Velocity Head Δp in. H <sub>2</sub> O	Orifice ΔH in. H <sub>2</sub> O	Actual Meter Vol. ft <sup>3</sup>	Stack Temp °F	Meter Temp		Probe Temp °F	Filter Exit Temp °F	Impinger Exit Temp °F
						Inlet °F	Outlet °F			
1-1	10:30:00	0.13	1.88	63.847	81	67	67	253	252	61
1-2	10:34:00	0.14	2.03	67.210	82	68	68	250	251	53
1-3	10:38:00	0.15	2.17	70.700	82	68	68	249	250	54
1-4	10:42:00	0.14	2.03	74.315	83	69	69	249	250	54
1-5	10:46:00	0.14	2.03	77.810	83	69	69	251	250	54
	10:50:00			81.303						
2-1	10:51:00	0.14	2.03	81.303	83	70	70	251	249	58
2-2	10:55:00	0.15	2.17	84.810	84	70	70	249	250	54
2-3	10:59:00	0.15	2.17	88.420	84	71	71	250	250	54
2-4	11:03:00	0.14	2.03	92.055	84	71	71	252	250	54
2-5	11:07:00	0.14	2.03	95.560	84	71	71	251	250	54
	11:11:00			99.062						
3-1	11:12:00	0.14	2.03	99.062	84	72	72	249	250	57
3-2	11:16:00	0.15	2.17	102.575	85	73	73	250	249	54
3-3	11:20:00	0.15	2.17	106.220	85	73	73	248	249	54
3-4	11:24:00	0.15	2.17	109.850	85	74	74	250	250	54
3-5	11:28:00	0.15	2.17	113.495	86	74	74	252	251	54
	11:32:00			117.136						
4-1	11:33:00	0.14	2.03	117.136	86	75	75	251	248	58
4-2	11:37:00	0.15	2.17	120.665	86	76	76	250	249	54
4-3	11:41:00	0.15	2.17	124.310	87	77	77	250	249	55
4-4	11:45:00	0.14	2.03	127.975	87	78	78	252	249	55
4-5	11:49:00	0.14	2.03	131.505	87	78	78	251	250	55
	11:53:00			135.056						
5-1	11:54:00	0.13	1.88	135.056	87	79	79	248	250	59
5-2	11:58:00	0.14	2.03	138.475	88	79	79	250	251	55
5-3	12:02:00	0.14	2.03	142.020	88	79	79	251	249	56
5-4	12:06:00	0.14	2.03	145.570	88	80	80	252	248	56
5-5	12:10:00	0.14	2.03	149.110	88	80	80	250	249	57
	12:14:00			152.669						

Total	1:40:00			88.822		73.6	73.6			
Average			2.07		85.1	73.6				
Min			1.88		81.0	67.0				
Max			2.17		88.0	80.0				

**Impinger Weight Sheet - Run 3**

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 7  
 Project #: M231408  
 Date: 4/27/2023  
 Test Method: 5/202  
 Weighed/Measured By: AMS  
 Balance ID: LV4

Scale Calibration Check Date: 4/27/2023  
Scale Calibration Check (see QS-6.05C for procedure)  
 must be within  $\pm 0.5g$  of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.1</u>
700	<u>700.1</u>

IMPINGER CONTENTS	FINAL	INITIAL	GAIN
	MLS / GRAMS	MLS / GRAMS	MLS / GRAMS
DI Water	819.2	799.3	19.9
DI Water	830.9	820.8	10.1
Empty	628.0	627.4	0.6
Silica Gel	890.1	886.2	3.9

<u>2,278.1</u>	<u>2,247.5</u>	<u>30.6</u>
<b>Liquid Final</b>	<b>Liquid Initial</b>	<b>Liquid Gain</b>
<u>890.1</u>	<u>886.2</u>	<u>3.9</u>
<b>Silica Final</b>	<b>Silica Initial</b>	<b>Silica Gain</b>

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 9  
**Project #:** M231408  
**Test Method:** 5/202  
**Test Engineer:** AMS  
**Test Technician:** RODS

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
<b>Temp ID:</b>	CM13	CM13	CM13
<b>Meter ID:</b>	CM13	CM13	CM13
<b>Pitot ID:</b>	3002	3002	3002
<b>Filter ID:</b>	6769	6761	6773
<b>Filter Pre-Weight (grams):</b>	0.46865	0.46629	0.46592
<b>Nozzle Diameter (Inches):</b>	0.486	0.486	0.486
<b>Meter Calibration Date:</b>	4/18/2023	4/18/2023	4/18/2023
<b>Meter Calibration Factor (Y):</b>	0.992	0.992	0.992
<b>Meter Orifice Setting (Delta H):</b>	1.520	1.520	1.520
<b>Nozzle Kit ID Number and Material:</b>	Quartz #5 (#106)	Quartz #5 (#106)	Quartz #5 (#106)
<b>Pitot Tube Coefficient:</b>		0.840	
<b>Probe Length (Feet):</b>		3.0	
<b>Probe Liner Material:</b>		Quartz	
<b>Sample Plane:</b>		Horizontal	
<b>Port Length (Inches):</b>		0.00	
<b>Port Size (Diameter, Inches):</b>		3.00	
<b>Port Type:</b>		Hole in duct	
<b>Duct Shape:</b>		Circular	
<b>Diameter (Feet):</b>		1	
<b>Duct Area (Square Feet):</b>		0.785	
<b>Upstream Diameters:</b>		5.0	
<b>Downstream Diameters:</b>		9.0	
<b>Number of Ports Sampled:</b>		2	
<b>Number of Points per Port:</b>		6	
<b>Minutes per Point:</b>		8.0	
<b>Minutes per Reading:</b>		4.0	
<b>Total Number of Traverse Points:</b>		12	
<b>Test Length (Minutes):</b>		96	
<b>Train Type:</b>		Anderson Box	
<b>Source Condition:</b>		Normal	
<b>Moisture Balance ID:</b>		LV4	
<b># of Runs</b>		3	

**Method 1 and 2 Cyclonic Flow Check Data**

**Project Number** M231408  
**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Location:** System 9  
**Pitot ID:** 3002  
**Pitot Coefficient:** 0.840  
**Probe Length:** 3

**Source Condition:** Normal  
**Run No.:** 1  
**Date:** 4/26/2023  
**Start Time:** 6:25  
**End Time:** 6:40  
**RM Testers:** AMS/RODS  
**Port Length:** 0.00

Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)	Port	Point	DP (in. H <sub>2</sub> O)	Sqrt. DP	Temp (°F)	Yaw (°)	Velocity (V)
A	1	0.04	0.2000	76.0	0.0	12.35	B	1	0.04	0.2000	76.0	1.0	12.35
A	2	0.05	0.2236	76.0	2.0	13.80	B	2	0.05	0.2236	76.0	1.0	13.80
A	3	0.06	0.2449	76.0	0.0	15.12	B	3	0.06	0.2449	76.0	0.0	15.12
A	4	0.06	0.2449	76.0	0.0	15.12	B	4	0.05	0.2236	76.0	2.0	13.80
A	5	0.05	0.2236	76.0	1.0	13.80	B	5	0.05	0.2236	76.0	1.0	13.80
A	6	0.04	0.2000	76.0	0.0	12.35	B	6	0.04	0.2000	76.0	1.0	12.35

**Average Yaw Angle** 0.8 °

Run 1 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 9  
 Source Condition: Normal

Date: 4/26/23  
 Start Time: 6:45  
 End Time: 8:25

DRY GAS METER CONDITIONS

STACK CONDITIONS

ΔH: 2.48 in. H<sub>2</sub>O  
 Meter Temperature, T<sub>m</sub>: 66.4 °F  
 Sqrt ΔP: 0.219 in. H<sub>2</sub>O  
 Stack Temperature, T<sub>s</sub>: 88.7 °F  
 Meter Volume, V<sub>m</sub>: 97.055 ft<sup>3</sup>  
 Meter Volume, V<sub>mstd</sub>: 82.372 dscf  
 Meter Volume, V<sub>wstd</sub>: 2.082 wscf  
 Isokinetic Variance: 102.3 %l  
 Test Length: 96.00 in mins.  
 Nozzle Diameter: 0.486 in inches  
 Barometric Pressure: 25.34 in Hg

Static Pressure 0.00 in. H<sub>2</sub>O  
 Flue Pressure (Ps): 25.34 in. Hg. abs.  
 Carbon Dioxide: %  
 Oxygen: %  
 Nitrogen: #VALUE! %  
 Gas Weight dry, M<sub>d</sub>: 29.000 lb/lb mole  
 Gas Weight wet, M<sub>s</sub>: 28.729 lb/lb mole  
 Excess Air: #VALUE! %  
 Gas Velocity, V<sub>s</sub>: 13.660 fps  
 Volumetric Flow: 644 acfm  
 Volumetric Flow: 512 dscfm  
 Volumetric Flow: 525 scfm

MOISTURE DETERMINATION

Initial Impinger Content: 2188.5 ml  
 Final Impinger Content: 2227.0 ml  
 Impinger Difference: 38.5 ml  
 Silica Initial Wt. 882.4 grams  
 Silica Final Wt. 888.1 grams  
 Silica Difference: 5.7 grams  
 Total Water Gain: 44.2  
 Moisture, Bws: 0.025  
 Supersaturation Value, Bws: 0.054

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	6:45:00	0.04	2.06	27.216	87	66	58	249	248	63
1-1	6:49:00	0.04	2.06	30.890	87	66	58	250	250	57
1-2	6:53:00	0.05	2.57	34.550	87	66	58	251	251	54
1-2	6:57:00	0.05	2.57	38.650	87	66	58	251	252	52
1-3	7:01:00	0.06	3.08	42.750	87	66	58	250	250	52
1-3	7:05:00	0.06	3.08	47.250	87	66	58	248	251	51
1-4	7:09:00	0.06	3.08	51.735	88	67	59	249	250	51
1-4	7:13:00	0.06	3.08	56.225	88	68	60	248	250	51
1-5	7:17:00	0.05	2.57	60.730	87	69	61	249	252	52
1-5	7:21:00	0.05	2.57	64.850	87	70	63	250	251	52
1-6	7:25:00	0.04	2.06	68.990	86	71	64	251	252	53
1-6	7:29:00	0.04	2.06	72.700	85	72	65	251	251	53
	7:33:00			76.411						
2-1	7:37:00	0.04	2.06	76.411	86	71	66	247	250	58
2-1	7:41:00	0.04	2.06	80.125	86	71	66	251	252	54
2-2	7:45:00	0.05	2.57	83.850	88	71	66	250	251	53
2-2	7:49:00	0.05	2.57	87.995	91	71	66	248	250	54
2-3	7:53:00	0.06	3.08	92.125	91	71	66	249	250	54
2-3	7:57:00	0.06	3.08	96.660	92	71	66	250	250	55
2-4	8:01:00	0.05	2.57	101.185	93	71	67	252	250	54
2-4	8:05:00	0.05	2.57	105.315	93	71	67	250	252	54
2-5	8:09:00	0.04	2.06	109.450	92	71	67	248	250	54
2-5	8:13:00	0.04	2.06	113.150	92	72	68	249	250	53
2-6	8:17:00	0.04	2.06	116.850	91	72	68	251	249	53
2-6	8:21:00	0.04	2.06	120.560	91	72	68	250	250	53
	8:25:00			124.271						

Total 1:36:00 97.055 69.5 63.4  
 Average 2.48 88.7 66.4  
 Min 2.06 85.0 58.0  
 Max 3.08 93.0 72.0

**Impinger Weight Sheet - Run 1**

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 9  
 Project #: M231408  
 Date: 4/26/2023  
 Test Method: 5/202  
 Weighed/Measured By: RODS  
 Balance ID: LV4

Scale Calibration Check Date: 4/26/2023  
Scale Calibration Check (see QS-6.05C for procedure)  
 must be within  $\pm 0.5g$  of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.0</u>
700	<u>700.1</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	784.5	761.1	23.4
DI Water	813.6	799.1	14.5
Empty	628.9	628.3	0.6
Silica Gel	888.1	882.4	5.7

<u>2,227.0</u>	<u>2,188.5</u>	<u>38.5</u>
<b>Liquid Final</b>	<b>Liquid Initial</b>	<b>Liquid Gain</b>
<u>888.1</u>	<u>882.4</u>	<u>5.7</u>
<b>Silica Final</b>	<b>Silica Initial</b>	<b>Silica Gain</b>



Run 2 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 9  
 Source Condition: Normal

Date: 4/26/23  
 Start Time: 8:40  
 End Time: 10:20

DRY GAS METER CONDITIONS

STACK CONDITIONS

ΔH: 2.48 In. H<sub>2</sub>O  
 Meter Temperature, T<sub>m</sub>: 76.8 °F  
 Sqrt ΔP: 0.219 In. H<sub>2</sub>O  
 Stack Temperature, T<sub>s</sub>: 93.5 °F  
 Meter Volume, V<sub>m</sub>: 98.332 ft<sup>3</sup>  
 Meter Volume, V<sub>mstd</sub>: 81.849 dscf  
 Meter Volume, V<sub>wstd</sub>: 1.922 wscf  
 Isokinetic Variance: 101.9 %l  
 Test Length: 96.00 in mins.  
 Nozzle Diameter: 0.486 in inches  
 Barometric Pressure: 25.34 in Hg

Static Pressure 0.00 in. H<sub>2</sub>O  
 Flue Pressure (Ps): 25.34 in. Hg. abs.  
 Carbon Dioxide: %  
 Oxygen: %  
 Nitrogen: #VALUE! %  
 Gas Weight dry, M<sub>d</sub>: 29.000 lb/lb mole  
 Gas Weight wet, M<sub>s</sub>: 28.748 lb/lb mole  
 Excess Air: #VALUE! %  
 Gas Velocity, V<sub>s</sub>: 13.728 fps  
 Volumetric Flow: 647 acfm  
 Volumetric Flow: 511 dscfm  
 Volumetric Flow: 523 scfm

MOISTURE DETERMINATION

Initial Impinger Content: 2227.0 ml  
 Final Impinger Content: 2262.2 ml  
 Impinger Difference: 35.2 ml  
 Silica Initial Wt. 888.1 grams  
 Silica Final Wt. 893.7 grams  
 Silica Difference: 5.6 grams  
 Total Water Gain: 40.8  
 Moisture, Bws: 0.023  
 Supersaturation Value, Bws: 0.063

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	8:40:00	0.04	2.06	25.457	90	68	68	247	246	54
1-1	8:44:00	0.04	2.06	29.155	91	69	68	249	248	50
1-2	8:48:00	0.05	2.57	32.865	92	70	68	250	249	48
1-2	8:52:00	0.05	2.57	36.995	93	72	69	251	251	46
1-3	8:56:00	0.06	3.08	41.145	94	74	69	252	250	45
1-3	9:00:00	0.06	3.08	45.675	94	75	70	251	250	46
1-4	9:04:00	0.06	3.08	50.235	93	76	70	250	250	47
1-4	9:08:00	0.06	3.08	54.790	93	77	71	250	249	48
1-5	9:12:00	0.05	2.57	59.360	93	77	71	251	251	48
1-5	9:16:00	0.05	2.57	63.530	93	79	72	252	248	49
1-6	9:20:00	0.04	2.06	67.720	94	80	74	250	249	50
1-6	9:24:00	0.04	2.06	71.470	94	81	75	253	251	51
	9:28:00			75.212						
2-1	9:32:00	0.04	2.06	75.212	94	81	75	247	249	54
2-1	9:36:00	0.04	2.06	78.975	94	81	76	249	250	51
2-2	9:40:00	0.05	2.57	82.725	94	81	77	250	249	50
2-2	9:44:00	0.05	2.57	86.925	94	81	77	252	249	50
2-3	9:48:00	0.05	2.57	91.145	94	82	78	251	248	50
2-3	9:52:00	0.05	2.57	95.350	94	82	78	250	252	51
2-4	9:56:00	0.05	2.57	99.575	95	84	79	247	251	51
2-4	10:00:00	0.05	2.57	103.775	95	85	79	249	250	51
2-5	10:04:00	0.05	2.57	108.010	95	85	80	248	251	52
2-5	10:08:00	0.05	2.57	111.950	94	86	81	250	250	52
2-6	10:12:00	0.04	2.06	116.200	94	86	81	250	250	52
2-6	10:16:00	0.04	2.06	120.000	94	86	81	250	251	52
	10:20:00			123.789						

Total 1:36:00 98.332 79.1 74.5  
 Average 2.48 93.5 76.8  
 Min 2.06 90.0 68.0  
 Max 3.08 95.0 86.0

### Impinger Weight Sheet - Run 2

**Client:** PCC Structural  
**Facility:** Carson City Facility  
**Test Location:** System 9  
**Project #:** M231408  
**Date:** 4/26/2023  
**Test Method:** 5/202  
**Weighed/Measured By:** RODS  
**Balance ID:** LV4

**Scale Calibration Check Date:** 4/26/2023  
**Scale Calibration Check (see QS-6.05C for procedure)**  
 must be within  $\pm 0.5g$  of certified mass  

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.0</u>
700	<u>700.1</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	806.2	784.5	21.7
DI Water	826.5	813.6	12.9
Empty	629.5	628.9	0.6
Silica Gel	893.7	888.1	5.6

<u>2,262.2</u> <b>Liquid Final</b>	<u>2,227.0</u> <b>Liquid Initial</b>	<u>35.2</u> <b>Liquid Gain</b>
<u>893.7</u> <b>Silica Final</b>	<u>888.1</u> <b>Silica Initial</b>	<u>5.6</u> <b>Silica Gain</b>

Run 3 - Method 5/202

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 9  
 Source Condition: Normal

Date: 4/26/23  
 Start Time: 10:35  
 End Time: 12:15

DRY GAS METER CONDITIONS

STACK CONDITIONS

ΔH: 2.36 In. H<sub>2</sub>O  
 Meter Temperature, T<sub>m</sub>: 90.1 °F  
 Sqrt ΔP: 0.214 In. H<sub>2</sub>O  
 Stack Temperature, T<sub>s</sub>: 95.8 °F  
 Meter Volume, V<sub>m</sub>: 98.243 ft<sup>3</sup>  
 Meter Volume, V<sub>mstd</sub>: 79.760 dscf  
 Meter Volume, V<sub>wstd</sub>: 1.879 wscf  
 Isokinetic Variance: 102.1 %l  
 Test Length: 96.00 in mins.  
 Nozzle Diameter: 0.486 in inches  
 Barometric Pressure: 25.34 in Hg

Static Pressure in. H<sub>2</sub>O  
 Flue Pressure (Ps): 25.34 in. Hg. abs.  
 Carbon Dioxide: %  
 Oxygen: %  
 Nitrogen: #VALUE! %  
 Gas Weight dry, M<sub>d</sub>: 29.000 lb/lb mole  
 Gas Weight wet, M<sub>s</sub>: 28.747 lb/lb mole  
 Excess Air: #VALUE! %  
 Gas Velocity, V<sub>s</sub>: 13.397 fps  
 Volumetric Flow: 631 acfm  
 Volumetric Flow: 496 dscfm  
 Volumetric Flow: 508 scfm

MOISTURE DETERMINATION

Initial Impinger Content: 2262.2 ml  
 Final Impinger Content: 2297.0 ml  
 Impinger Difference: 34.8 ml  
 Silica Initial Wt. 893.7 grams  
 Silica Final Wt. 898.8 grams  
 Silica Difference: 5.1 grams  
 Total Water Gain: 39.9  
 Moisture, Bws: 0.023  
 Supersaturation Value, Bws: 0.067

Port-Point No.	Clock Time	Velocity	Orifice	Actual	Stack	Meter Temp		Probe	Filter	Impinger
		Head Δp in. H <sub>2</sub> O	ΔH in. H <sub>2</sub> O	Meter Vol. ft <sup>3</sup>	Temp °F	Inlet °F	Outlet °F	Temp °F	Exit Temp °F	Exit Temp °F
1-1	10:35:00	0.04	2.06	25.211	95	83	83	245	244	63
1-1	10:39:00	0.04	2.06	29.000	96	84	83	251	247	54
1-2	10:43:00	0.05	2.57	32.795	97	86	83	249	250	53
1-2	10:47:00	0.05	2.57	37.025	97	87	84	250	249	53
1-3	10:51:00	0.06	3.08	41.275	97	88	85	252	250	53
1-3	10:55:00	0.06	3.08	45.925	97	89	85	249	251	54
1-4	10:59:00	0.05	2.57	50.600	97	90	86	248	251	54
1-4	11:03:00	0.05	2.57	54.850	97	91	86	250	250	54
1-5	11:07:00	0.04	2.06	59.125	97	91	87	248	250	54
1-5	11:11:00	0.04	2.06	62.950	97	92	88	249	251	55
1-6	11:15:00	0.04	2.06	66.775	97	92	88	250	251	55
1-6	11:19:00	0.04	2.06	70.600	97	92	88	251	251	55
	11:23:00			74.431						
2-1	11:27:00	0.04	2.06	74.431	96	93	89	250	250	60
2-1	11:31:00	0.04	2.06	78.275	96	94	90	251	253	56
2-2	11:35:00	0.05	2.57	82.125	96	94	90	253	252	55
2-2	11:39:00	0.05	2.57	86.420	95	95	91	252	248	55
2-3	11:43:00	0.05	2.57	90.725	95	95	91	249	247	54
2-3	11:47:00	0.05	2.57	95.040	95	95	91	253	247	54
2-4	11:51:00	0.05	2.57	99.350	94	95	92	252	253	54
2-4	11:55:00	0.05	2.57	103.675	94	95	92	253	247	54
2-5	11:59:00	0.04	2.06	107.990	94	95	92	252	251	54
2-5	12:03:00	0.04	2.06	111.850	94	96	92	252	252	55
2-6	12:07:00	0.04	2.06	115.725	94	96	93	251	249	55
2-6	12:11:00	0.04	2.06	119.575	95	96	93	252	251	55
	12:15:00			123.454						

Total 1:36:00 98.243 91.8 88.4  
 Average 2.36 95.8 90.1  
 Min 2.06 94.0 83.0  
 Max 3.08 97.0 96.0

**Impinger Weight Sheet - Run 3**

Client: PCC Structurals  
 Facility: Carson City Facility  
 Test Location: System 9  
 Project #: M231408  
 Date: 4/26/2023  
 Test Method: 5/202  
 Weighed/Measured By: RODS  
 Balance ID: LV4

Scale Calibration Check Date: 4/26/2023  
Scale Calibration Check (see QS-6.05C for procedure)  
 must be within  $\pm 0.5g$  of certified mass

<u>Certified Weight, grams</u>	<u>Result, grams</u>
200	<u>200.0</u>
500	<u>500.0</u>
700	<u>700.1</u>

IMPINGER CONTENTS	FINAL MLS / GRAMS	INITIAL MLS / GRAMS	GAIN MLS / GRAMS
DI Water	826.6	806.2	20.4
DI Water	840.7	826.5	14.2
Empty	629.7	629.5	0.2
Silica Gel	898.8	893.7	5.1

<u>2,297.0</u>	<u>2,262.2</u>	<u>34.8</u>
<b>Liquid Final</b>	<b>Liquid Initial</b>	<b>Liquid Gain</b>
<u>898.8</u>	<u>893.7</u>	<u>5.1</u>
<b>Silica Final</b>	<b>Silica Initial</b>	<b>Silica Gain</b>

## Appendix F - Plant Operating Data

PCC Structurals Inc.  
Carson City Facility  
M231408  
Plant Operating Data

<b>System</b>	<b>Date</b>	<b>Process Rate (tons per hour)</b>
1	4/26/2023	0.10
2	4/25/23	0.25
3	4/25/23	0.12
5	4/27/23	0.15
7	4/27/23	0.10
9	4/26/23	0.14

## Appendix G - Field Data Sheets





NON-ISOKINETIC MOISTURE FIELD DATA SHEET

Project Name/Number: PCL/M231408 Date: 4/24  
 Test Location: SYSTEM 11 Source Condition: Normal  
 Test Method: 4 Meter ID: CM45 Pre-Calibration Date: 4/18/2023  
 Meter ΔH: 1.687 Meter Y: 0.999 Test Engineer: Rods

Test (Run) No. <u>2</u>		Barometric Pressure (P <sub>bar</sub> ) <u>25.34</u> in. Hg		Gas Sample Analysis			
Static Pressure: <u>0.1</u>		Stack Temperature: <u>220</u> (From Method <u>2</u> Test Data)		<u>0.50</u> %CO <sub>2</sub> <u>20.50</u> %O <sub>2</sub>			
Clock Time 24 hour	Meter Volume (Vm) ft <sup>3</sup> or L (Circle One)	Meter Gage Pressure (ΔH) in. H <sub>2</sub> O	Meter Inlet Temp. (t <sub>m</sub> ) °F	Meter Outlet Temp. (t <sub>m</sub> ) °F	Impinger Outlet Temp °F	Meter Vacuum "Hg	
800	77.757	1.7	70	70	61	3	
805	81.442	1.7	70	70	61	3	
810	85.504	1.7	70	70	62	3	
815	89.387	1.7	70	70	62	3	
820	93.284	1.7	71	71	63	3	
825	97.184	1.7	71	71	64	3	
830	101.051	1.7	72	72	64	3	
835	104.943	1.7	72	72	65	3	
840	108.729	1.7	72	72	65	3	
845	112.615	1.7	72	72	65	3	
850	116.459	1.7	73	73	66	3	
855	120.182	1.7	73	73	67	3	
900	124.059	1.7	73	73	67	3	
Total Vol. in ft <sup>3</sup> (Vm)=		Multiply total volume collected in Liters by 0.035315 to convert to ft <sup>3</sup>					
Comments:				Pre-Test Leak Check:		Post-Test Leak Check:	
				0.000 @ 10 "Hg		0.000 @ 10 "Hg	

Scale ID Number L44  
 Scale Calibration Check Date: \_\_\_\_\_  
 Scale Calibration Check (see QS-6.05C for procedure)  
 250 grams 250.1  
 500 grams 500.0  
 750 grams 750.1

Condensate \_\_\_\_\_ Silica Gel or Train \_\_\_\_\_  
 \_\_\_\_\_ mls (V<sub>i</sub>) \_\_\_\_\_ grams (W<sub>i</sub>)  
 - \_\_\_\_\_ mls (V<sub>i</sub>) - \_\_\_\_\_ grams (W<sub>i</sub>)  
 = \_\_\_\_\_ mls gained = \_\_\_\_\_ grams gained

Average Meter Temperature: \_\_\_\_\_  
 (average of both inlet and outlet if applicable)

Test (Run) No. <u>3</u>		Barometric Pressure (P <sub>bar</sub> ) <u>25.34</u> in. Hg		Gas Sample Analysis			
Static Pressure: <u>0.1</u>		Stack Temperature: <u>214</u> (From Method <u>2</u> Test Data)		<u>0.50</u> %CO <sub>2</sub> <u>20.50</u> %O <sub>2</sub>			
Clock Time 24 hour	Meter Volume (Vm) ft <sup>3</sup> or L (Circle One)	Meter Gage Pressure (ΔH) in. H <sub>2</sub> O	Meter Inlet Temp. (t <sub>m</sub> ) °F	Meter Outlet Temp. (t <sub>m</sub> ) °F	Impinger Outlet Temp °F	Meter Vacuum "Hg	
915	125.784	1.7	80	80	63	2	
920	129.926	1.7	80	80	63	2	
925	134.016	1.7	80	80	63	2	
930	138.127	1.7	80	80	64	2	
935	142.224	1.7	81	81	64	2	
940	146.386	1.7	81	81	65	2	
945	150.497	1.7	81	81	65	2	
950	154.627	1.7	82	82	65	2	
955	158.777	1.7	82	82	65	2	
1000	162.909	1.7	82	82	65	2	
1005	167.001	1.7	82	82	66	2	
1010	170.894	1.7	82	82	66	2	
1015	174.734	1.7	82	82	66	2	
Total Vol. in ft <sup>3</sup> (Vm)=		Multiply total volume collected in Liters by 0.035315 to convert to ft <sup>3</sup>					
Comments:				Pre-Test Leak Check:		Post-Test Leak Check:	
				0.000 @ 12 "Hg		0.000 @ 14 "Hg	

Condensate \_\_\_\_\_ Silica Gel or Train \_\_\_\_\_  
 \_\_\_\_\_ mls (V<sub>i</sub>) \_\_\_\_\_ grams (W<sub>i</sub>)  
 - \_\_\_\_\_ mls (V<sub>i</sub>) - \_\_\_\_\_ grams (W<sub>i</sub>)  
 = \_\_\_\_\_ mls gained = \_\_\_\_\_ grams gained

Average Meter Temperature: \_\_\_\_\_  
 (average of both inlet and outlet if applicable)



### Volumetric Flow Rate Determination Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Test Location: SYSTEM 1  
 Source Condition: Normal  
 Test Engineer: Rods

Date: 4/24  
 Test Number: PRE  
 Start Time: 625  
 End Time: 640  
 Test Tech: Rods

Duct Diameter 0.25 ft      Upstream Disturbance, Diameters 18.0  
 Flue Area 0.05 ft<sup>2</sup>      Downstream Disturbance, Diameters 15.0  
 Port Length 3 " Port Size 2 " Port Type Nipple Pitot ID Standard Pitot Coefficient (C<sub>p</sub>) 0.99  
 P<sub>bar</sub> 25.34 "Hg      CO<sub>2</sub> % 0.50      Wet Bulb Temp \_\_\_\_\_      Leak Checks Passed@  
 Static 0.1 "H<sub>2</sub>O      O<sub>2</sub> % 20.50      Dry Bulb Temp \_\_\_\_\_      Pre 4 Inches H<sub>2</sub>O  
 Static \_\_\_\_\_ "Hg      N<sub>2</sub> % \_\_\_\_\_      B<sub>w</sub>s 0.120      Post 4 Inches H<sub>2</sub>O  
 P<sub>s</sub> \_\_\_\_\_ "Hg      Meter No CM45      Fluke # CM45      Umbilical ID \_\_\_\_\_

Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees	Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees
1-1	0.10	215		0	2-1	0.09	215		0
2	0.10	215		1	2	0.12	215		0
3	0.11	214		0	3	0.11	214		1
4	0.15	217		0	4	0.15	214		2
5	0.17	217		2	5	0.17	214		1
6	0.19	217		0	6	0.17	217		0
7	0.20	217		1	7	0.19	217		2
8	0.21	217		2	8	0.21	217		3
<b>Average</b>									

.44 x CO<sub>2</sub>% + .32 x O<sub>2</sub>% + .28 x N<sub>2</sub>% = \_\_\_\_\_ (Md)

(\_\_\_\_\_ Md x \_\_\_\_\_ 1-Bws) + (18 x \_\_\_\_\_ Bws) = \_\_\_\_\_ (Ms)

85.49 x \_\_\_\_\_ Cp x  $\sqrt{\frac{(\text{_____}) Ts \text{ } ^\circ R}{Ms \times Ps}}$  x \_\_\_\_\_ √ΔP = \_\_\_\_\_ ft/sec (Vs)

\_\_\_\_\_ Vs x \_\_\_\_\_ Flue Area x 60 = \_\_\_\_\_ acfm

17.647 x \_\_\_\_\_ acfm x  $\frac{Ps}{Ts \text{ } ^\circ R}$  = \_\_\_\_\_ scfm x 60 = \_\_\_\_\_ scfh

**Volumetric Flow Rate Determination Field Data Sheet**

Project Number: M231408  
 Client: DCC  
 Test Location: SYSTEM 1  
 Source Condition: Normal  
 Test Engineer: Rods

Date: 4/24  
 Test Number: Post 1/Pre 2  
 Start Time: 746  
 End Time: 749  
 Test Tech: AMS

Duct Diameter 0.25 ft      Upstream Disturbance, Diameters 18.0  
 Flue Area 0.05 ft<sup>2</sup>      Downstream Disturbance, Diameters 15.0  
 Port Length 3 " Port Size 2 " Port Type Nipple Pitot ID STANMID Pitot Coefficient (C<sub>p</sub>) 0.99  
 P<sub>bar</sub> 25.34 "Hg      CO<sub>2</sub> % 0.50      Wet Bulb Temp \_\_\_\_\_      Leak Checks Passed @  
 Static 0.1 "H<sub>2</sub>O      O<sub>2</sub> % 20.50      Dry Bulb Temp \_\_\_\_\_      Pre 4 Inches H<sub>2</sub>O  
 Static \_\_\_\_\_ "Hg      N<sub>2</sub> % \_\_\_\_\_      B<sub>ws</sub> 0.12      Post 4 Inches H<sub>2</sub>O  
 P<sub>s</sub> \_\_\_\_\_ "Hg      Meter No CM45      Fluke # CM45      Umbilical ID \_\_\_\_\_

Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees	Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees
1- 1	0.05	214			2- 1	0.04	214		
2	0.05	214			2	0.05	214		
3	0.07	215			3	0.05	214		
4	0.07	214			4	0.05	214		
5	0.08	214			5	0.06	215		
6	0.07	214			6	0.07	215		
7	0.08	214			7	0.08	215		
8	0.09	214			8	0.08	215		
<b>Average</b>									

.44 x CO<sub>2</sub>% + .32 x O<sub>2</sub>% + .28 x N<sub>2</sub>% = \_\_\_\_\_ (Md)

(\_\_\_\_\_ Md x \_\_\_\_\_ 1-Bws) + (18 x \_\_\_\_\_ Bws) = \_\_\_\_\_ (Ms)

85.49 x \_\_\_\_\_ C<sub>p</sub> x  $\sqrt{\frac{(\text{_____}) T_s \text{ } ^\circ R}{M_s \times \text{_____} P_s}}$  x \_\_\_\_\_  $\sqrt{\Delta P}$  = \_\_\_\_\_ ft/sec (Vs)

\_\_\_\_\_ Vs x \_\_\_\_\_ Flue Area x 60 = \_\_\_\_\_ acfm

17.647 x \_\_\_\_\_ acfm x  $\frac{P_s}{T_s \text{ } ^\circ R}$  = \_\_\_\_\_ scfm x 60 = \_\_\_\_\_ scfh



### Volumetric Flow Rate Determination Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Test Location: SYSTEM 1  
 Source Condition: Normal  
 Test Engineer: ROOS

Date: 7/24  
 Test Number: Post 2/Pre 3  
 Start Time: 901  
 End Time: 914  
 Test Tech: AMS

Duct Diameter 0.25 ft      Upstream Disturbance, Diameters 18.0  
 Flue Area 0.05 ft<sup>2</sup>      Downstream Disturbance, Diameters 15.0  
 Port Length 3 " Port Size 2 " Port Type Nipple Pitot ID STANDARD Pitot Coefficient (C<sub>p</sub>) 0.99  
 P<sub>bar</sub> 25.34 "Hg      CO<sub>2</sub> % 0.50      Wet Bulb Temp \_\_\_\_\_      Leak Checks Passed@  
 Static 0.1 "H<sub>2</sub>O      O<sub>2</sub> % 20.50      Dry Bulb Temp \_\_\_\_\_      Pre 4 Inches H<sub>2</sub>O  
 Static \_\_\_\_\_ "Hg      N<sub>2</sub> % \_\_\_\_\_      B<sub>ws</sub> 0.12      Post 4 Inches H<sub>2</sub>O  
 P<sub>s</sub> \_\_\_\_\_ "Hg      Meter No. CM45      Fluke # CM45      Umbilical ID \_\_\_\_\_

Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees	Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees
1- 1	0.10	214			2- 1	0.11	214		
2	0.10	214			2	0.13	214		
3	0.11	214			3	0.15	214		
4	0.12	215			4	0.14	214		
5	0.14	215			5	0.14	215		
6	0.14	214			6	0.14	215		
7	0.15	217			7	0.13	214		
8	0.15	217			8	0.14	214		
<b>Average</b>									

.44 x CO<sub>2</sub>% + .32 x O<sub>2</sub>% + .28 x N<sub>2</sub>% = \_\_\_\_\_ (Md)

(\_\_\_\_\_ Md x \_\_\_\_\_ 1-Bws) + (18 x \_\_\_\_\_ Bws) = \_\_\_\_\_ (Ms)

85.49 x \_\_\_\_\_ Cp x  $\sqrt{\frac{(\text{_____}) Ts \text{ } ^\circ R}{Ms \times Ps}}$  x \_\_\_\_\_ √ΔP = \_\_\_\_\_ ft/sec (Vs)

\_\_\_\_\_ Vs x \_\_\_\_\_ Flue Area x 60 = \_\_\_\_\_ acfm

17.647 x \_\_\_\_\_ acfm x  $\frac{Ps}{Ts \text{ } ^\circ R}$  = \_\_\_\_\_ scfm x 60 = \_\_\_\_\_ scfh





**Isokinetic Sampling Cover Sheet**

Client:	PCC Structural	Pitot Tube Cp:	0.840
Facility:	Carson City Facility	Probe Length (Feet):	6
Test Location:	System 2	Probe Liner Material:	Quartz
Project #:	1231408	Sample Plane:	(Hrztl) or Vert.
Test Method(s):	5/202	Port Length ("):	6
Test Engineer:	AMS	Port Diameter ("):	3
Test Technician:	BB	Port Type:	Hole in Duct
Upstream Diameters:	2.0	Duct Shape:	Circ. or (Rect.)
Downstream Diameters:	7.5	Diameter (Feet):	—
# of Ports Sampled:	5	Length (Feet):	2
# of Points per Port:	5	Width (Feet):	2
Source Condition:	Normal	Duct Area (Sq. Feet):	4
Diluent Model/SN:	SEE	Minutes per Point:	4
Mid Gas ID/concentration:	Gas 1%CO2 %O2	Total Traverse Points:	25
High Gas ID/concentration:	DATA 1%CO2 %O2	Test Length (Min.):	100
Moisture Balance ID:	LV4	Train Type:	Anderson

	R# 1	R# 2	R# 3
Meter ID:	CM45	CM45	CM45
Pitot ID:	4039	4039	4039
Filter ID:	6538	6539	6556
Filter Pre-Weight (g):	0.46936	0.46294	0.46666
Nozzle Diameter ("):	0.495	0.495	0.495
Meter Cal Factor (Y):	0.999	0.999	0.999
Meter Orifice Setting (ΔH):	1.687	1.687	1.687
Nozzle Kit ID:	Quartz #5	Quartz #5	Quartz #5
Individual Nozzle ID:	*845	*845	*845
Pre Pitot Leak Check:	0.00 @ 4 "H <sub>2</sub> O	0.00 @ 5 "H <sub>2</sub> O	0.00 @ 4 "H <sub>2</sub> O
Post Pitot Leak Check:	0.00 @ 5 "H <sub>2</sub> O	0.00 @ 4 "H <sub>2</sub> O	0.00 @ 4 "H <sub>2</sub> O
Pre Nozzle Leak Check:	0.000 @ 15 "Hg	0.000 @ 19 "Hg	0.000 @ 18 "Hg
Post Nozzle Leak Check:	0.000 @ 19 "Hg	0.000 @ 18 "Hg	0.000 @ 17 "Hg
Barometric Pressure, "Hg:	25.217	25.217	25.217
Static Pressure, "H <sub>2</sub> O:	0.0	0.0	0.0
CO <sub>2</sub> %:			
O <sub>2</sub> %:			

Comments: port length a length of insulator



### Volumetric Flow Rate Determination Field Data Sheet

Project Number: M231408  
 Client: PCC Structures  
 Test Location: System 2  
 Source Condition: Normal  
 Test Engineer: AMS

Date: 04/28/23  
 Test Number: Per PreFlow/Null Point  
 Start Time: 0705  
 End Time: 0320  
 Test Tech: POPS

Duct Diameter 2 ft      Upstream Disturbance, Diameters 2.0  
 Flue Area 4 ft<sup>2</sup>      Downstream Disturbance, Diameters 3.6  
 Port Length 6 " Port Size 3 " Port Type Hot Stage Pitot ID 4039 Pitot Coefficient (Cp) .840  
 P<sub>bar</sub> 26.217 "Hg      CO<sub>2</sub> % \_\_\_\_\_      Wet Bulb Temp \_\_\_\_\_      Leak Checks Passed@  
 Static 0.0 "H<sub>2</sub>O      O<sub>2</sub> % \_\_\_\_\_      Dry Bulb Temp \_\_\_\_\_      Pre 5 Inches H<sub>2</sub>O  
 Static \_\_\_\_\_ "Hg      N<sub>2</sub> % \_\_\_\_\_      B<sub>ws</sub> \_\_\_\_\_      Post 5 Inches H<sub>2</sub>O  
 P<sub>s</sub> \_\_\_\_\_ "Hg      Meter No. C445      Fluke # C445      Umbilical ID \_\_\_\_\_

Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees	Port-Point #	ΔP	Temp. °F	Null Point Angle, Degrees
A-1	0.10	1200		0	D-1	0.10	1211	3
-2	0.11	1209		1	-2	0.11	1211	3
-3	0.11	1210		2	-3	0.11	1211	1
-4	0.11	1210		0	-4	0.11	1211	1
-5	0.10	1211		2	-5	0.10	1212	1
B-1	0.10	1211		0	E-1	0.10	1212	2
-2	0.11	1210		1	-2	0.10	1213	2
-3	0.12	1210		1	-3	0.11	1213	3
-4	0.11	1211		2	-4	0.10	1214	1
-5	0.10	1211		0	-5	0.10	1215	1
C-1	0.10	1211		1				
-2	0.11	1210		2				
-3	0.13	1210		1				
-4	0.12	1210		2				
-5	0.10	1210		1				
<b>Average</b>								

44 x CO<sub>2</sub>% + .32 x O<sub>2</sub>% + .28 x N<sub>2</sub>% = \_\_\_\_\_ (Md)

(\_\_\_\_\_ Md x \_\_\_\_\_ 1-Bws) + (18 x \_\_\_\_\_ Bws) = \_\_\_\_\_ (Ms)

85.49 x \_\_\_\_\_ Cp x  $\sqrt{\frac{(\text{_____}) Ts \text{ } ^\circ R}{\text{_____} Ms \times \text{_____} Ps}}$  x \_\_\_\_\_  $\sqrt{\Delta P}$  = \_\_\_\_\_ ft/sec (Vs )  
 \_\_\_\_\_ Vs x \_\_\_\_\_ Flue Area x 60 = \_\_\_\_\_ acfm

17.647 x \_\_\_\_\_ acfm x  $\frac{Ps}{Ts \text{ } ^\circ R}$  = \_\_\_\_\_ scfm x 60 = \_\_\_\_\_ scfh



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC Structures  
 Plant: Cerran City Facility

Date: 04/25/2023  
 Test Location: System 2  
 Test Method: 51202

Test Number: Run 1  
 Operator: AMS Test Tech: BB  
 Page Number: 1 of 1

Port-Point #	Time	(ΔP)	K' = _____ K' x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Probe Temp. °F	Filter Temp. °F	Impinger Outlet Well Temp. °F	CPM Filter Temp. °F	Pump Vacuum, "Hg	K-Calcs (Optional)				
													Square Root, ΔP	K=	x _____	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
														Meter Rate, Cubic Feet/Min.			
1-1	0340	0.10	1.78	72.588	1208	52	52	250	250	54	71	5					
-2	0344	0.11	1.95	76.750	1207	52	52	249	248	54	72	5					
-3	0348	0.11	1.95	79.220	1208	52	52	248	247	54	72	5					
-4	0352	0.10	1.78	82.610	1209	52	52	249	248	54	72	5					
-5	0366	0.10	1.78	85.845	1210	52	52	250	249	54	72	5					
—	0400	—	—	89.069	—	—	—	—	—	—	—	—					
2-1	0405	0.10	1.78	89.069	1211	52	52	250	250	54	72	5					
-2	0409	0.11	1.95	92.306	1212	52	52	251	251	54	72	5					
-3	0413	0.12	2.13	96.675	1212	53	53	251	252	54	72	5					
-4	0417	0.10	1.78	99.235	1212	53	53	252	251	54	72	5					
-5	0421	0.10	1.78	102.475	1213	53	53	251	249	54	72	5					
—	0425	—	—	105.707	—	—	—	—	—	—	—	—					
3-1	0430	0.10	1.78	108.707	1213	53	53	252	248	54	72	5					
-2	0434	0.11	1.95	108.950	1214	53	53	254	251	54	72	5					
-3	0438	0.12	2.13	112.235	1215	54	54	253	250	54	72	5					
-4	0442	0.11	1.95	115.900	1218	54	54	252	250	54	72	5					
-5	0446	0.10	1.78	119.275	1219	55	55	252	251	54	72	5					
—	0450	—	—	122.522	—	—	—	—	—	—	—	—					
4-1	0456	0.10	1.78	122.522	1214	55	55	251	250	55	73	5					
-2	0459	0.11	1.95	125.875	1213	55	55	249	252	55	73	5					
-3	0503	0.11	1.95	129.185	1207	55	55	249	249	55	73	5					
-4	0507	0.11	1.95	132.595	1207	55	55	250	251	55	73	5					
-5	0511	0.10	1.78	136.010	1202	55	55	250	250	55	73	5					
—	0515	—	—	139.264	—	—	—	—	—	—	—	—					
5-1	0520	0.10	1.78	139.264	1216	55	55	248	249	55	73	5					
-2	0524	0.10	1.78	142.515	1214	55	55	249	250	56	74	5					
-3	0528	0.11	1.95	145.765	1214	55	55	250	250	56	74	5					
-4	0532	0.11	1.95	149.125	1212	55	55	252	251	56	74	5					
-5	0536	0.10	1.78	152.575	1210	55	55	251	252	56	74	5					
—	0540	—	—	155.819	—	—	—	—	—	—	—	—					



**IMPINGER WEIGHT SHEET**

PLANT: PCC Scale ID Number LV4

PROJECT NO: M231408 Scale Calibration Check Date: 2

LOCATION: System 2 Scale Calibration Check (see QS-6.05C for procedure)  
must be within ± 0.5g of certified mass

DATE: 4/25 <sup>200</sup>grams 200.0

TEST NO: 1 500 grams 500.0

METHOD: 5/202 <sup>700</sup>grams 700.1

WEIGHED/MEASURED BY: \_\_\_\_\_

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	433.1	432.2	0.	EMPTY
IMPINGER 2	643.1	639.5		EMPTY
IMPINGER 3	853.0	757.0		DT
IMPINGER 4	908.7	890.8		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                             
FINAL TOTAL INITIAL TOTAL TOTAL IMPINGER GAIN

SILICA                             
FINAL TOTAL INITIAL TOTAL TOTAL SILICA GAIN

### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC Structural  
 Plant: Carson City Facility

Date: 04/25/23  
 Test Location: System 2  
 Test Method: 51202

Test Number: Run 2  
 Operator: AMS Test Tech: BB  
 Page Number: 1 of 1

Port-Point #	Time	ΔP	K <sup>1</sup> = K <sup>1</sup> x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Probe Temp. °F	Filter Temp. °F	Impinger Outlet Well Temp. °F	CPM Filter Temp. °F	Pump Vacuum, "Hg	K-Calcs (Optional)				
													Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
														Meter Rate, Cubic Feet/Min.			
1-1	0605	0.10	1.78	60.544	1215	53	53	248	249	45	73	5					
-2	0609	0.10	1.78	63.740	1218	53	53	249	251	46	73	5					
-3	0612	0.11	1.90	67.010	1223	54	54	250	252	46	74	5					
-4	0617	0.11	1.95	70.400	1232	54	54	250	250	47	74	5					
-5	0621	0.10	1.78	73.725	1234	55	55	252	248	47	74	5					
—	0625	—	—	77.007	—	—	—	—	—	—	—	—					
2-1	0629	0.10	1.78	77.007	1245	55	55	251	250	47	74	5					
-2	0633	0.11	1.95	80.225	1249	55	55	250	250	48	74	5					
-3	0637	0.11	1.95	83.600	1245	56	56	250	250	48	74	5					
-4	0641	0.11	1.95	86.975	1195	56	56	252	249	47	74	5					
5	0645	0.10	1.78	90.415	1201	57	57	249	253	48	74	5					
—	0649	—	—	93.678	—	—	—	—	—	—	—	—					
3-1	0653	0.10	1.78	93.678	1262	57	57	250	254	48	74	5					
-2	0657	0.10	1.78	96.885	1254	57	57	250	252	48	74	5					
-3	0701	0.11	1.95	100.100	1236	58	58	249	250	48	74	5					
-4	0705	0.11	1.95	103.450	1232	58	58	252	252	48	74	5					
-5	0709	0.10	1.78	106.900	1239	59	59	250	250	50	74	5					
—	0713	—	—	110.166	—	—	—	—	—	—	—	—					
4-1	0717	0.10	1.78	110.166	1217	59	59	249	249	51	74	5					
-2	0721	0.10	1.78	113.445	1208	60	60	247	250	52	76	5					
-3	0725	0.10	1.78	116.720	1207	60	60	248	251	53	76	5					
-4	0729	0.11	1.95	120.000	1203	59	59	252	250	54	74	5					
-5	0733	0.11	1.95	123.450	1199	58	58	252	249	56	74	5					
—	0737	—	—	126.888	—	—	—	—	—	—	—	—					
6-1	0741	0.10	1.78	126.888	1206	57	57	251	251	56	73	5					
-2	0745	0.10	1.78	130.150	1213	57	57	250	250	57	72	5					
-3	0749	0.10	1.78	133.420	1207	57	57	252	250	58	71	5					
-4	0753	0.10	1.78	136.670	1203	57	57	250	250	59	72	5					
-5	0757	0.10	1.78	139.950	1197	57	57	250	251	60	73	5					
—	0801	—	—	143.222	—	—	—	—	—	—	—	—					



**IMPINGER WEIGHT SHEET**

PLANT: PCC Structures Scale ID Number LV4

PROJECT NO: 1123 1408 Scale Calibration Check Date: \_\_\_\_\_

LOCATION: System 2 Scale Calibration Check (see QS-6.05C for procedure)  
must be within ± 0.5g of certified mass

DATE: 4/25 20 \_\_\_\_\_  
250 grams 200.0

TEST NO: 2 500 grams 500.0

METHOD: 5/202 750 grams 700.1

WEIGHED/MEASURED BY: \_\_\_\_\_

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	430.1	429.4		MT
IMPINGER 2	653.9	639.7		MT
IMPINGER 3	866.5	778.4		DF
IMPINGER 4	917.8	906.5		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                             
FINAL TOTAL INITIAL TOTAL TOTAL IMPINGER GAIN

SILICA                             
FINAL TOTAL INITIAL TOTAL TOTAL SILICA GAIN



### Isokinetic Sampling Field Data Sheet

Project Number: 1221408  
 Client: PCC Structures  
 Plant: Carson City Facility

Date: 04/25/23  
 Test Location: System 2  
 Test Method: 5/202

Test Number: Run 3  
 Operator: ANS Test Tech: RB  
 Page Number: 1 of 1

Port-Point #	Time	(ΔP)	K <sup>1</sup> = K <sup>1</sup> x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Probe Temp. °F	Filter Temp. °F	Impinger Outlet Well Temp. °F	CPM Filter Temp. °F	Pump Vacuum, "Hg	K-Calcs (Optional)				
													Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
														Meter Rate, Cubic Feet/Min.			
1-1	0835	0.10	1.78	44.996	1199	59	59	251	246	64	83	5					
-2	0839	0.11	1.95	48.290	1202	59	59	251	249	50	71	5					
-3	0843	0.11	1.95	51.725	1192	59	59	250	251	52	71	5					
-4	0847	0.10	1.78	55.180	1151	59	59	250	251	51	71	5					
-5	0851	0.10	1.78	58.520	1159	59	59	251	251	52	70	5					
-	0855	-	-	61.846	-	-	-	-	-	-	-	-					
2-1	0859	0.10	1.78	61.846	1165	59	59	251	250	53	71	5					
-2	0903	0.10	1.78	65.170	1171	60	60	250	250	54	72	5					
-3	0907	0.10	1.78	68.495	1159	60	60	250	249	56	74	5					
-4	0911	0.11	1.95	71.820	1169	59	59	251	250	57	74	5					
-5	0915	0.10	1.78	75.300	1151	60	60	250	250	58	74	5					
-	0919	-	-	78.639	-	-	-	-	-	-	-	-					
3-1	0923	0.10	1.78	78.639	1117	60	60	250	249	58	74	5					
-2	0927	0.11	1.95	82.025	1163	59	59	251	250	58	75	5					
-3	0931	0.11	1.95	85.500	1154	60	60	250	251	59	75	5					
-4	0935	0.10	1.78	88.640	1155	60	60	250	250	59	75	5					
-5	0939	0.10	1.78	91.975	1161	60	60	250	250	58	75	5					
-	0943	-	-	95.309	-	-	-	-	-	-	-	-					
4-1	0947	0.10	1.78	95.309	1167	60	60	250	250	58	76	5					
-2	0951	0.10	1.78	98.635	1132	61	61	250	250	58	77	5					
-3	0955	0.11	1.95	102.005	1138	61	61	250	250	59	77	5					
-4	0959	0.10	1.78	105.540	1154	61	61	250	251	59	77	5					
-5	1003	0.10	1.78	108.875	1159	61	61	251	251	59	77	5					
-	1007	-	-	112.211	-	-	-	-	-	-	-	-					
5-1	1011	0.10	1.78	112.211	1162	61	61	249	249	59	77	5					
-2	1015	0.10	1.78	115.550	1163	61	61	250	251	59	78	5					
-3	1019	0.10	1.78	118.890	1130	61	61	248	249	60	78	5					
-4	1023	0.10	1.78	122.250	1141	61	61	251	249	60	78	5					
-5	1027	0.10	1.78	125.615	1156	62	62	250	250	61	78	5					
-	1031	-	-	128.961	-	-	-	-	-	-	-	-					



**IMPINGER WEIGHT SHEET**

PLANT: PCC Scale ID Number LV4

PROJECT NO: M231408 Scale Calibration Check Date: 2

LOCATION: System 2 Scale Calibration Check (see QS-6.05C for procedure)  
must be within ± 0.5g of certified mass

DATE: 4/25 <sup>200</sup> 250 grams 200.0

TEST NO: 3 500 grams 500.0

METHOD: 5/202 <sup>700</sup> 750 grams 700.1

WEIGHED/MEASURED BY: \_\_\_\_\_

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	433.3	431.9		Empty
IMPINGER 2	655.7	640.4		Empty
IMPINGER 3	851.1	759.1		DI
IMPINGER 4	903.6	894.9		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                             
FINAL TOTAL INITIAL TOTAL TOTAL IMPINGER GAIN

SILICA                             
FINAL TOTAL INITIAL TOTAL TOTAL SILICA GAIN

**Isokinetic Sampling Cover Sheet**

<b>Client:</b>	PCC Structural	<b>Pitot Tube Cp:</b>	.840
<b>Facility:</b>	Carson City	<b>Probe Length (Feet):</b>	3.0
<b>Test Location:</b>	System 3 - Air Furnace	<b>Probe Liner Material:</b>	Quartz
<b>Project #:</b>	M231408	<b>Sample Plane:</b>	Hrztl. or Vert.
<b>Test Method(s):</b>	5/202	<b>Port Length ("):</b>	0.00
<b>Test Engineer:</b>	TWM	<b>Port Diameter ("):</b>	4.00
<b>Test Technician:</b>	RODS	<b>Port Type:</b>	Hole in duct
<b>Upstream Diameters:</b>	9.3	<b>Duct Shape:</b>	Circ. or Rect.
<b>Downstream Diameters:</b>	3.5	<b>Diameter (Feet):</b>	0.5
<b># of Ports Sampled:</b>	2	<b>Length (Feet):</b>	
<b># of Points per Port:</b>	12	<b>Width (Feet):</b>	
<b>Source Condition:</b>	Normal	<b>Duct Area (Sq. Feet):</b>	0.196
<b>Diluent Model/SN:</b>		<b>Minutes per Point:</b>	4.0
<b>Mid Gas ID/concentration:</b>	%CO2      %O2	<b>Total Traverse Points:</b>	24
<b>High Gas ID/concentration:</b>	%CO2      %O2	<b>Test Length (Min.):</b>	96
<b>Moisture Balance ID:</b>	LV4	<b>Train Type:</b>	Anderson

**R# 1**

**R# 2**

**R# 3**

	R# 1	R# 2	R# 3
<b>Meter ID:</b>	CM 13	CM 13	CM 13
<b>Pitot ID:</b>	3002	3002	3002
<b>Filter ID:</b>	6781	6780	6782
<b>Filter Pre-Weight (g):</b>	0.46808	0.46824	0.46946
<b>Nozzle Diameter ("):</b>	0.166	0.166	0.166
<b>Meter Cal Factor (Y):</b>	0.992	0.992	0.992
<b>Meter Orifice Setting (DH):</b>	1.520	1.520	1.520
<b>Nozzle Kit ID:</b>	Quartz 6	Quartz 6	Quartz 6
<b>Individual Nozzle ID:</b>	123	123	123
<b>Pre Pitot Leak Check:</b>	0.000 @ 4.2 "H <sub>2</sub> O	0.000 @ 4.0 "H <sub>2</sub> O	0.000 @ 3.9 "H <sub>2</sub> O
<b>Post Pitot Leak Check:</b>	0.000 @ 4.0 "H <sub>2</sub> O	0.000 @ 3.9 "H <sub>2</sub> O	0.000 @ 4.4 "H <sub>2</sub> O
<b>Pre Nozzle Leak Check:</b>	0.000 @ 16 "Hg	0.000 @ 16 "Hg	0.000 @ 16 "Hg
<b>Post Nozzle Leak Check:</b>	0.000 @ 15 "Hg	0.000 @ 16 "Hg	0.000 @ 15 "Hg
<b>Barometric Pressure, "Hg:</b>	25.217	25.217	25.217
<b>Static Pressure, "H<sub>2</sub>O:</b>	0.7	0.7	0.7
<b>CO<sub>2</sub> %:</b>	0	0	0
<b>O<sub>2</sub> %:</b>	20.9	20.9	20.9

**Comments:**



### Volumetric Flow Rate Determination Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Test Location: System 3  
 Source Condition: Normal  
 Test Engineer: TWM

Date: 4/25/23  
 Test Number: Null Point  
 Start Time: 3:05  
 End Time: 3:20  
 Test Tech: RODS

Duct Diameter 0.5 ft  
 Flue Area 0.196 ft<sup>2</sup>  
 Port Length 0 " Port Size 4.0 " Port Type Hole in Duct Pitot ID 3002 Pitot Coefficient (C<sub>p</sub>) 0.840  
 P<sub>bar</sub> 25.17 "Hg CO<sub>2</sub> % 0 Wet Bulb Temp \_\_\_\_\_ Leak Checks Passed@  
 Static 0.7 "H<sub>2</sub>O O<sub>2</sub> % 20.9 Dry Bulb Temp \_\_\_\_\_ Pre \_\_\_\_\_ Inches H<sub>2</sub>O  
 Static \_\_\_\_\_ "Hg N<sub>2</sub> % \_\_\_\_\_ B<sub>ws</sub> \_\_\_\_\_ Post \_\_\_\_\_ Inches H<sub>2</sub>O  
 P<sub>s</sub> \_\_\_\_\_ "Hg Meter No. CM13 Fluke # \_\_\_\_\_ Umbilical ID \_\_\_\_\_

Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees	Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees
1-1	3.10	86		2	2-1	3.10	86		1
-2	3.10	86		1	-2	3.10	86		1
-3	3.00	86		1	-3	3.00	86		1
-4	3.00	86		2	-4	3.00	86		2
-5	3.00	86		1	-5	2.80	86		1
-6	3.00	86		1	-6	2.80	86		2
-7	2.80	85		2	-7	2.70	86		1
-8	2.80	85		1	-8	2.70	85		1
-9	2.70	85		2	-9	2.60	85		1
-10	2.60	85		1	-10	2.60	85		2
-11	2.60	85		2	-11	2.50	85		2
-12	2.50	85		1	-12	2.50	85		1
Average Angle 1.375									

$.44 \times \text{CO}_2\% + .32 \times \text{C}_2\% + .28 \times \text{N}_2\% = \text{_____ (Mvd)}$

$(\text{_____ Md} \times \text{_____ 1-Bv/s}) + (18 \times \text{_____ Bws}) = \text{_____ (Ms)}$

$85.49 \times \text{_____ Cp} \times \sqrt{\frac{\text{_____ Ts } ^\circ\text{R}}{\text{_____ Ms} \times \text{_____ Ps}}} \times \text{_____ } \sqrt{\Delta P} = \text{_____ ft/sec (Vs)}$

$\text{_____ Vs} \times \text{_____ Flue Area} \times 60 = \text{_____ acfm}$

$17.647 \times \text{_____ acfm} \times \frac{\text{Ps}}{\text{Ts } ^\circ\text{R}} = \text{_____ scfm} \times 60 = \text{_____ scfh}$



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Plant: Carson City

Date: 4/25/23  
 Test Location: System 3  
 Test Method: 5/202

Test Number: \_\_\_\_\_  
 Operator: Thm Test Tech: RDS  
 Page Number: 1 of 1

Port-Point #	Time	ΔP	K <sup>1</sup> = _____ K <sup>1</sup> x ΔP	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	CPM Filter Temp, °F	Pump Vacuum, "Hg	K-Calcs (Optional)				
													Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	3:40	3.10	1.80	69.233	87	50	48	252	247	45	72	10					
-2	3:44	3.10	1.80	72.660	86	50	48	252	247	44	71	10					
-3	3:48	3.00	1.74	76.100	86	50	48	252	248	44	70	10					
-4	3:52	3.00	1.74	74.480	86	50	48	252	248	44	70	10					
-5	3:56	3.00	1.74	82.860	86	50	48	252	249	43	70	10					
-6	4:00	2.90	1.68	86.230	86	50	48	251	249	44	70	10					
-7	4:04	2.90	1.62	89.570	85	51	48	251	249	43	70	10					
-8	4:08	2.90	1.62	92.850	85	51	48	248	242	42	70	10					
-9	4:12	2.70	1.57	96.130	85	54	49	253	248	43	70	10					
-10	4:16	2.60	1.51	99.350	85	55	49	251	249	46	70	10					
-11	4:20	2.60	1.51	102.530	85	57	50	251	251	49	70	10					
-12	4:24	2.50	1.45	105.710	85	58	50	252	247	53	70	10					
	4:28			108.823													
2-1	4:35	3.10	1.80	108.823	84	59	53	251	250	56	71	5					
-2	4:39	3.10	1.80	112.310	84	59	53	251	250	56	71	5					
-3	4:43	3.00	1.74	115.800	84	59	53	251	250	56	71	5					
-4	4:47	3.00	1.74	119.230	82	60	53	250	248	56	71	5					
-5	4:51	2.90	1.62	122.690	80	61	54	249	245	55	71	5					
-6	4:55	2.80	1.62	126.010	78	61	54	248	248	55	71	5					
-7	4:59	2.70	1.57	129.380	77	61	55	248	251	55	71	5					
-8	5:03	2.70	1.57	132.680	76	61	54	248	247	54	71	5					
-9	5:07	2.60	1.51	135.990	75	61	54	248	249	54	71	5					
-10	5:11	2.60	1.51	139.210	75	61	54	253	249	54	71	5					
-11	5:15	2.50	1.45	142.440	75	60	54	249	250	54	71	5					
-12	5:19	2.50	1.45	145.610	76	60	55	253	248	55	71	5					
	5:23			148.831													



**IMPINGER WEIGHT SHEET**

PLANT: ACC Scale ID Number LV4  
 PROJECT NO: M251408 Scale Calibration Check Date: 4/25/23  
 LOCATION: System 2 S Scale Calibration Check (see QS-6.05C for procedure)  
 DATE: 4/05/23 must be within ± 0.5g of certified mass  
 TEST NO: \_\_\_\_\_  
 METHOD: 5/202 200 grams 200.0  
 500 grams 500.0  
 700 grams 700.1  
 WEIGHED/MEASURED BY: TMM

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	413.6	413.1		Empty
IMPINGER 2	647.6	646.6		Empty
IMPINGER 3	688.3	699.0		SI
IMPINGER 4	894.3	874.5		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                                                                 
 FINAL TOTAL INITIAL TOTAL TOTAL IMPINGER GAIN

SILICA                                                                 
 FINAL TOTAL INITIAL TOTAL TOTAL SILICA GAIN



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Plant: Person City

Date: 4/25/23  
 Test Location: System 3  
 Test Method: S / 202

Test Number: 2  
 Operator: twm Test Tech: ZOD  
 Page Number: 1 of 1

Port-Point #	Time	ΔP	K <sup>1</sup> = K <sup>1</sup> x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	CPM Filter Temp, °F	Pump Vacuum, "Hg	K-Calcs (Optional)				
													Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
														Meter Rate, Cubic Feet/Min.			
1-1	5:55	3.10	2.14	49.445	83	53	53	252	243	46	70	5					
2	5:59	3.10	2.14	53.240	82	57	53	252	252	45	70	5					
3	6:03	3.00	2.07	56.830	84	58	53	249	250	46	70	5					
4	6:07	3.00	2.07	60.720	84	61	53	248	249	46	70	5					
5	6:11	2.90	2.00	64.560	84	61	54	253	252	48	70	5					
6	6:15	2.90	2.00	68.030	83	61	55	251	251	49	70	5					
7	6:19	2.80	1.93	71.650	84	62	55	248	247	49	70	5					
8	6:23	2.80	1.93	75.580	85	62	55	245	251	49	70	5					
9	6:27	2.70	1.86	79.220	85	62	55	252	247	49	70	5					
10	6:31	2.70	1.86	82.770	85	62	55	253	251	50	70	5					
11	6:35	2.60	1.79	86.350	83	62	55	247	249	50	70	5					
12	6:39	2.60	1.79	89.860	84	62	55	254	251	50	70	5					
	6:43			93.374													
2-1	6:50	3.00	2.07	93.374	87	57	56	254	250	49	70	5					
2	6:54	3.00	2.07	97.130	85	62	57	253	244	48	70	5					
3	6:58	2.90	2.00	100.620	86	63	57	253	249	48	70	5					
4	7:02	2.90	2.00	104.590	88	65	58	252	248	48	70	5					
5	7:06	2.80	1.93	108.220	88	65	58	249	248	48	70	5					
6	7:10	2.80	1.93	111.640	87	66	58	250	248	48	70	5					
7	7:14	2.70	1.86	115.020	85	66	59	248	248	48	70	5					
8	7:18	2.70	1.86	119.160	82	64	59	249	249	48	70	5					
9	7:22	2.60	1.79	122.780	81	63	59	250	249	48	70	5					
10	7:26	2.60	1.79	126.310	80	63	58	251	246	49	70	5					
11	7:30	2.50	1.73	129.840	79	63	58	251	246	49	70	5					
12	7:34	2.50	1.73	133.320	79	63	58	252	247	50	70	5					
	7:38			136.782													

**IMPINGER WEIGHT SHEET**

PLANT: PCC Scale ID Number LV4  
 PROJECT NO: M231408 Scale Calibration Check Date: 4/25/23  
 LOCATION: System 3 Scale Calibration Check (see QS-6.05C for procedure)  
 DATE: 4/25/23 must be within ± 0.5g of certified mass  
 TEST NO: 2 250 grams 200.0  
 METHOD: 5/202 500 grams 500.0  
 WEIGHED/MEASURED BY: TUM 750 grams 700.1

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	412.2	412.6		Empty
IMPINGER 2	647.4	647.6		Empty
IMPINGER 3	679.5	686.3		DI
IMPINGER 4	904.9	894.3		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                             
 FINAL TOTAL INITIAL TOTAL TOTAL IMPINGER GAIN

SILICA                             
 FINAL TOTAL INITIAL TOTAL TOTAL SILICA GAIN



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Plant: Carson City

Date: 4/25/23  
 Test Location: System 3  
 Test Method: 5/202

Test Number: 3  
 Operator: TWM Test Tech: RODS  
 Page Number: 1 of 1

Port-Point #	Time	(ΔP)	K' = K' x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	CPM Filter Temp, °F	Pump Vacuum, "Hg	K-Calcs (Optional)				
													Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
														Meter Rate, Cubic Feet/Min.			
1-1	8:00	3.00	2.07	38.812	86	56	56	254	243	56	73	4					
2	8:04	2.90	2.00	42.550	87	56	56	251	251	52	72	4					
3	8:08	2.90	2.00	46.240	90	56	56	251	250	50	72	4					
4	8:12	2.90	2.00	49.920	89	57	57	250	249	53	76	4					
5	8:16	2.80	1.93	53.440	90	63	57	251	249	59	77	4					
6	8:20	2.80	1.93	57.180	91	63	58	248	249	53	77	4					
7	8:24	2.70	1.86	60.650	92	63	58	250	249	52	75	4					
8	8:28	2.70	1.86	63.610	93	64	58	252	247	52	74	4					
9	8:32	2.70	1.86	67.520	92	65	59	248	248	53	74	4					
10	8:36	2.60	1.79	71.530	91	65	59	249	250	53	73	4					
11	8:40	2.60	1.79	75.180	90	64	60	250	249	53	74	4					
12	8:44	2.50	1.72	78.730	89	64	60	250	248	53	74	4					
	8:48			82.015													
2-1	8:54	3.10	2.14	82.015	90	62	60	253	253	56	79	4					
2	8:58	3.00	2.07	85.620	88	62	60	248	250	54	74	4					
3	9:02	3.00	2.07	89.250	89	62	60	248	251	54	74	4					
4	9:06	2.80	1.93	93.310	90	63	60	250	248	54	74	4					
5	9:10	2.80	1.93	96.590	90	64	60	251	249	54	74	4					
6	9:14	2.80	1.93	100.220	91	64	59	248	249	55	78	4					
7	9:18	2.70	1.86	103.910	88	64	60	249	248	54	78	4					
8	9:22	2.70	1.86	107.830	88	64	60	247	248	54	78	4					
9	9:26	2.60	1.79	111.360	87	65	60	250	249	54	78	4					
10	9:30	2.60	1.79	115.010	87	65	60	248	249	54	79	4					
11	9:34	2.50	1.72	118.490	87	65	60	251	249	54	79	4					
12	9:38	2.50	1.72	121.960	87	65	60	248	249	54	79	4					
	9:42			125.720													



**IMPINGER WEIGHT SHEET**

PLANT: PCC Scale ID Number LV4  
 PROJECT NO: M231408 Scale Calibration Check Date: 4/25/23  
 LOCATION: System 3 Scale Calibration Check (see QS-6.05C for procedure)  
 DATE: 4/25/23 must be within ± 0.5g of certified mass  
 TEST NO: 3 250 grams 200.0  
 METHOD: 5/202 500 grams 800.0  
 750 grams 700.1  
 WEIGHED/MEASURED BY: TWM

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	413.3	412.2		Empty
IMPINGER 2	647.7	647.4		Empty
IMPINGER 3	673.0	672.5		DI
IMPINGER 4	910.5	904.9		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                                                                 
 FINAL TOTAL INITIAL TOTAL TOTAL IMPINGER GAIN

SILICA                                                                 
 FINAL TOTAL INITIAL TOTAL TOTAL SILICA GAIN



**Isokinetic Sampling Cover Sheet**

<b>Client:</b>	PCC Structural		<b>Pitot Tube Cp:</b>	0.840
<b>Facility:</b>	Carson City		<b>Probe Length (Feet):</b>	5.0
<b>Test Location:</b>	System 4		<b>Probe Liner Material:</b>	Glass
<b>Project #:</b>	M231408		<b>Sample Plane:</b>	<input checked="" type="radio"/> Hrztl. or <input type="radio"/> Vert.
<b>Test Method(s):</b>	S		<b>Port Length ("):</b>	0.00
<b>Test Engineer:</b>	TWM		<b>Port Diameter ("):</b>	4.00
<b>Test Technician:</b>	RB		<b>Port Type:</b>	Hole in Duct
<b>Upstream Diameters:</b>	3.7		<b>Duct Shape:</b>	<input checked="" type="radio"/> Circ or <input type="radio"/> Rect.
<b>Downstream Diameters:</b>	2.0		<b>Diameter (Feet):</b>	2.5
<b># of Ports Sampled:</b>	2		<b>Length (Feet):</b>	
<b># of Points per Port:</b>	12		<b>Width (Feet):</b>	
<b>Source Condition:</b>	Normal		<b>Duct Area (Sq. Feet):</b>	4.909
<b>Diluent Model/SN:</b>			<b>Minutes per Point:</b>	4.0
<b>Mid Gas ID/concentration:</b>	%CO2	%O2	<b>Total Traverse Points:</b>	24
<b>High Gas ID/concentration:</b>	%CO2	%O2	<b>Test Length (Min.):</b>	96
<b>Moisture Balance ID:</b>	LV3		<b>Train Type:</b>	Hot Box

	R# 1	R# 2	R# 3
<b>Meter ID:</b>	CM 46	CM 46	CM 46
<b>Pitot ID:</b>	6969	6969	6969
<b>Filter ID:</b>	6554	6779	6563
<b>Filter Pre-Weight (g):</b>	0.46788	0.46811	0.44605
<b>Nozzle Diameter ("):</b>	.262	.262	.262
<b>Meter Cal Factor (Y):</b>	1.001	1.001	1.001
<b>Meter Orifice Setting (ΔH):</b>	1.751	1.751	1.751
<b>Nozzle Kit ID:</b>	Quartz 5	Quartz 5	Quartz 5
<b>Individual Nozzle ID:</b>	299	299	299
<b>Pre Pitot Leak Check:</b>	0.000 @ 4.1 "H <sub>2</sub> O	0.000 @ 4.0 "H <sub>2</sub> O	0.000 @ 3.8 "H <sub>2</sub> O
<b>Post Pitot Leak Check:</b>	0.000 @ 4.0 "H <sub>2</sub> O	0.000 @ 3.8 "H <sub>2</sub> O	0.000 @ 4.4 "H <sub>2</sub> O
<b>Pre Nozzle Leak Check:</b>	0.000 @ 16 "Hg	0.000 @ 17 "Hg	0.000 @ 15 "Hg
<b>Post Nozzle Leak Check:</b>	0.000 @ 14 "Hg	0.000 @ 15 "Hg	0.000 @ 15 "Hg
<b>Barometric Pressure, "Hg:</b>	25.340	25.340	25.340
<b>Static Pressure, "H<sub>2</sub>O:</b>	0.7	0.7	0.7
<b>CO<sub>2</sub> %:</b>	0	0	0
<b>O<sub>2</sub> %:</b>	20.9	20.9	20.9

**Comments:**



## Volumetric Flow Rate Determination Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Test Location: System 4-1  
 Source Condition: Normal  
 Test Engineer: TWM

Date: 4/26/23  
 Test Number: Null Point  
 Start Time: 6:30  
 End Time: 6:45  
 Test Tech: RB

Duct Diameter 2.5 ft  
 Flue Area 4.909 ft<sup>2</sup>  
 Port Length 0 " Port Size 4.0 " Port Type Flange Pitot ID 0969 Pitot Coefficient (C<sub>p</sub>) .840  
 P<sub>bar</sub> 25.340 "Hg CO<sub>2</sub> % 0 Wet Bulb Temp \_\_\_\_\_ Leak Checks Passed @  
 Static 0.7 "H<sub>2</sub>O O<sub>2</sub> % 20.9 Dry Bulb Temp \_\_\_\_\_ Pre 4.0 Inches H<sub>2</sub>O  
 Static \_\_\_\_\_ "Hg N<sub>2</sub> % \_\_\_\_\_ Post 4.0 Inches H<sub>2</sub>O  
 P<sub>s</sub> \_\_\_\_\_ "Hg Meter No. CM460 Fluke # \_\_\_\_\_ Umbilical ID \_\_\_\_\_

Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees	Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees
1-1	0.67	65		2	7-1	0.73	67		2
-2	0.40	66		2	-2	0.69	68		2
-3	0.30	67		2	3	0.44	68		2
-4	0.33	67		2	-4	0.34	68		2
-5	0.30	67		2	-5	0.32	68		2
-6	0.20	67		2	-6	0.33	68		2
-7	0.28	67		2	-7	0.34	68		2
-8	0.25	67		2	-8	0.30	68		2
-9	0.25	67		2	-9	0.26	68		2
-10	0.25	67		2	-10	0.20	68		2
-11	0.28	67		2	-11	0.22	68		2
-12	0.25	67		2	-12	0.24	68		2
<b>Average</b>									

44 x CO<sub>2</sub>% + .32 x O<sub>2</sub>% + .28 x N<sub>2</sub>% = \_\_\_\_\_ (Md)

(\_\_\_\_\_ Md x \_\_\_\_\_ 1-Bws) + (18 x \_\_\_\_\_ Bws) = \_\_\_\_\_ (Ms)

85.49 x \_\_\_\_\_ Cp x  $\sqrt{\frac{(\text{_____}) T_s \text{ } ^\circ\text{R}}{\text{_____ Ms} \times \text{_____ Ps}}}$  x \_\_\_\_\_  $\sqrt{\Delta P}$  = \_\_\_\_\_ ft/sec (Vs)

\_\_\_\_\_ Vs x \_\_\_\_\_ Flue Area x 60 = \_\_\_\_\_ acfm

17.647 x \_\_\_\_\_ acfm x  $\frac{Ps}{Ts \text{ } ^\circ\text{R}}$  = \_\_\_\_\_ scfm x 60 = \_\_\_\_\_ scfh



### Isokinetic Sampling Field Data Sheet

Project Number: M231403  
 Client: PCC  
 Plant: Carson City

Date: 4/26/23  
 Test Location: System 4  
 Test Method: S

Test Number: 1  
 Operator: Wm Test Tech: JB  
 Page Number: 1 of 1

Port-Point #	Time	$(\Delta P)$	K <sup>1</sup> = K <sup>1</sup> x $\Delta P$ Orifice Setting ( $\Delta H$ )	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	K-Calcs (Optional)				
												Square Root, $\Delta P$	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	7:00	0.79	4.01	2.182	64	45	45	5	230	253	46					
-2	7:04	0.79	4.01	6.620	64	46	46	5	248	255	51					
-3	7:09	0.71	3.61	11.700	64	47	47	4.5	255	254	52					
-4	7:12	0.65	3.30	16.250	64	48	48	4	254	253	54					
-5	7:16	0.59	2.49	20.890	70	49	49	3.5	254	253	56					
-6	7:20	0.39	1.98	24.370	70	50	50	3	253	254	59					
-7	7:24	0.20	1.02	27.750	69	51	51	2	255	254	58					
-8	7:28	0.19	0.97	30.170	68	52	52	2	254	253	58					
-9	7:32	0.19	0.97	32.560	67	53	53	2	253	254	60					
-10	7:36	0.19	0.97	34.950	67	54	54	2	255	255	59					
-11	7:40	0.20	1.02	37.380	67	56	56	2	254	254	60					
-12	7:44	0.19	0.97	39.810	67	56	56	2	254	260	60					
	7:48			42.208												
2-1	7:58	0.47	2.39	42.208	68	61	61	4	254	253	55					
-2	8:02	0.44	2.23	46.010	68	61	61	4	252	253	56					
-3	8:06	0.39	1.98	49.680	69	62	62	3.5	253	254	57					
-4	8:10	0.33	1.68	53.150	70	63	63	3	253	253	58					
-5	8:14	0.30	1.52	56.340	70	64	64	3	254	254	57					
-6	8:18	0.22	1.12	59.390	70	65	65	2.5	253	253	50					
-7	8:22	0.22	1.12	62.020	71	65	65	2.5	254	254	49					
-8	8:26	0.22	1.12	64.630	71	66	66	2.5	253	253	50					
-9	8:30	0.22	1.12	67.220	72	67	67	2.5	254	253	49					
-10	8:34	0.23	1.17	69.840	71	68	68	2.5	253	254	50					
-11	8:38	0.25	1.27	72.520	72	68	68	2.5	253	253	49					
-12	8:42	0.24	1.22	75.280	72	69	69	2.5	254	253	49					
	8:46			77.976												



**IMPINGER WEIGHT SHEET**

PLANT: RCC Carson Scale ID Number LV3  
 UNIT NO: System 4 Scale Calibration Check Date: 4/26/23  
 LOCATION: Carson City Scale Calibration Check (see QS-6.05C for procedure)  
 DATE: 4/26/23 must be within ± 0.5g of certified mass  
 TEST NO: 1 200 grams 199.9  
 METHOD: 5 500 grams 499.8  
 WEIGHED/MEASURED BY: TWM 700 grams 699.0

Circle One:	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	718.0	725.5		DI
IMPINGER 2	744.3	744.9		DI
IMPINGER 3	655.5	654.0		Empty
IMPINGER 4	769.9	785.0		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                             
 FINAL TOTAL      INITIAL TOTAL      TOTAL IMPINGER GAIN

SILICA                             
 FINAL TOTAL      INITIAL TOTAL      TOTAL SILICA GAIN

### Isokinetic Sampling Field Data Sheet

Project Number: 4231408  
 Client: PCC  
 Plant: Carson City

Date: 4-26-23  
 Test Location: System 4  
 Test Method: 5

Test Number: 2  
 Operator: Jwm Test Tech: RB  
 Page Number: 1 of 1

Port-Point #	Time	ΔP	K' = _____ K' x ΔP	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	K-Calcs (Optional)				
												Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	9:15	0.52	2.68	78.817	75	72	72	5	253	260	51					
-2	9:19	0.48	2.48	82.750	74	72	72	5	252	258	49					
-3	9:23	0.43	2.22	86.780	74	74	74	5	252	254	52					
-4	9:27	0.30	1.86	90.480	73	73	73	5	252	252	54					
-5	9:31	0.34	1.75	93.930	72	74	74	4	252	252	54					
-6	9:35	0.29	1.50	97.260	72	75	75	3.5	253	253	54					
-7	9:39	0.25	1.29	99.830	71	75	75	3	252	252	55					
-8	9:43	0.27	1.39	102.620	71	76	76	3	252	252	55					
-9	9:47	0.28	1.44	105.510	72	76	76	3	251	252	55					
-10	9:51	0.29	1.50	108.460	72	77	77	3	252	253	56					
-11	9:55	0.28	1.44	111.460	72	78	78	3	252	252	57					
-12	9:59	0.26	1.34	114.420	72	78	78	3	252	252	57					
	10:03			117.283												
2-1	10:08	0.50	2.47	117.293	73	79	79	5	253	252	60					
-2	10:12	0.61	3.01	121.240	72	79	79	5	252	252	60					
-3	10:16	0.59	2.91	125.630	71	80	80	5	251	251	60					
-4	10:20	0.56	2.76	129.930	72	81	81	5	252	251	61					
-5	10:24	0.51	2.51	134.150	72	82	82	5	252	251	61					
-6	10:28	0.41	2.02	138.180	74	83	83	4.5	252	252	60					
-7	10:32	0.22	1.08	141.780	74	83	83	3	252	251	60					
-8	10:36	0.21	1.04	144.430	74	84	84	3	253	252	61					
-9	10:40	0.23	1.13	147.020	74	84	84	3	252	251	61					
-10	10:44	0.23	1.13	149.740	74	84	84	3	252	251	62					
-11	10:48	0.23	1.13	152.450	74	84	84	3	251	252	62					
-12	10:52	0.22	1.08	155.150	75	85	85	3	251	252	62					
	10:56			157.826					253	252	61					



**IMPINGER WEIGHT SHEET**

PLANT: PCC Scale ID Number LV3  
 UNIT NO: System 4 Scale Calibration Check Date: 4/26/23  
 LOCATION: Carson City  
 DATE: 4-26-23 Scale Calibration Check (see QS-6.05C for procedure)  
 TEST NO: 2 must be within ± 0.5g of certified mass  
 METHOD: 5 200 grams 199.9  
 500 grams 499.8  
 750 grams 699.8  
 WEIGHED/MEASURED BY: TWM

Circle One:	FINAL WEIGHT MLS / GRAMS	INITIAL WEIGHT MLS / GRAMS	IMPINGER GAIN	IMPINGER CONTENTS
IMPINGER 1	710.2	710.0		DI
IMPINGER 2	743.8	744.3		DI
IMPINGER 3	658.5	655.5		Empty
IMPINGER 4	808.8	796.9		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS  
FINAL TOTAL      INITIAL TOTAL      TOTAL IMPINGER GAIN

SILICA  
FINAL TOTAL      INITIAL TOTAL      TOTAL SILICA GAIN



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Plant: Carson City

Date: 4/26/22  
 Test Location: System 4  
 Test Method: S

Test Number: 3  
 Operator: TMM Test Tech: RB  
 Page Number: 1 of 1

Port-Point #	Time	ΔP	K <sup>1</sup> = K <sup>1</sup> x ΔP	Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	K-Calcs (Optional)				
													Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	11:15	0.65	3.55		58.321	76	84	84	5	248	250	65					
2	11:19	0.88	4.51		62.860	77	85	85	7	253	254	61					
3	11:23	0.87	4.46		68.150	78	85	85	7	252	256	60					
4	11:27	0.74	3.80		73.420	78	85	85	7	251	256	60					
5	11:31	0.60	3.08		78.260	78	86	86	5	251	258	58					
6	11:35	0.45	2.31		82.650	78	86	86	4	251	253	56					
7	11:39	0.27	1.38		86.450	78	87	87	3	251	252	52					
8	11:43	0.29	1.49		89.320	78	87	87	3	250	252	51					
9	11:47	0.31	1.59		92.420	78	87	87	3	251	252	50					
10	11:51	0.34	1.74		95.530	78	87	87	3	252	251	49					
11	11:55	0.35	1.64		98.870	78	87	87	3	251	251	48					
12	11:59	0.29	1.49		102.120	79	88	88	3	251	251	48					
	12:05				105.208												
2-1	12:08	0.50	2.56		105.208	78	88	88	4	251	252	65					
2	12:12	0.78	2.46		104.730	79	88	88	4	251	251	48					
3	12:16	0.43	2.21		113.160	79	88	88	4	251	250	47					
4	12:20	0.58	1.95		116.870	79	88	88	3.5	251	252	50					
5	12:24	0.36	1.85		120.350	79	88	88	3.5	251	252	51					
6	12:28	0.31	1.59		123.760	79	88	88	3	252	251	50					
7	12:32	0.28	1.44		126.920	79	89	89	3	252	251	49					
8	12:36	0.31	1.59		129.910	79	89	89	3	251	251	50					
9	12:40	0.34	1.74		133.060	79	89	89	3	251	252	51					
10	12:44	0.34	1.74		136.360	79	89	89	3	251	251	52					
11	12:48	0.34	1.74		139.670	79	89	89	3	252	251	52					
12	12:52	0.32	1.64		142.990	79	89	89	3	251	251	52					
	12:56				146.194												



**IMPINGER WEIGHT SHEET**

PLANT: PCC Scale ID Number LV3  
 UNIT NO: System 4 Scale Calibration Check Date: 4/26/23  
 LOCATION: Carson City Scale Calibration Check (see QS-6.05C for procedure)  
 DATE: 4/26/23 must be within ± 0.5g of certified mass  
 TEST NO: 3 ~~250~~ grams 140.9  
 METHOD: 5 500 grams 499.8  
 WEIGHED/MEASURED BY: TWM ~~750~~ grams 649.8

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	702.0	710.2		DI
IMPINGER 2	742.0	743.8		DI
IMPINGER 3	661.2	658.5		Empty
IMPINGER 4	821.6	808.8		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                                                                                
                             FINAL TOTAL      INITIAL TOTAL      TOTAL IMPINGER GAIN

SILICA                                                                                
                             FINAL TOTAL      INITIAL TOTAL      TOTAL SILICA GAIN



**Isokinetic Sampling Cover Sheet**

Client:	PCC Structural	Pitot Tube Cp:	.840
Facility:	Carson City	Probe Length (Feet):	5.0
Test Location:	System 5	Probe Liner Material:	Glass
Project #:	M231408	Sample Plane:	(Hrztl) or Vert.
Test Method(s):	5	Port Length ("):	0.0
Test Engineer:	TWM	Port Diameter ("):	4.0
Test Technician:	RB	Port Type:	Side in Duct
Upstream Diameters:	2.0	Duct Shape:	(Circ) or Rect.
Downstream Diameters:	2.0	Diameter (Feet):	2.5
# of Ports Sampled:	2	Length (Feet):	
# of Points per Port:	12	Width (Feet):	
Source Condition:	Normal	Duct Area (Sq. Feet):	4.909
Diluent Model/SN:		Minutes per Point:	4.0
Mid Gas ID/concentration:	%CO2    %O2	Total Traverse Points:	24
High Gas ID/concentration:	%CO2    %O2	Test Length (Min.):	96
Moisture Balance ID:	LV 3	Train Type:	Hot Box

R# 1

R# 2

R# 3

	<u>R# 1</u>	<u>R# 2</u>	<u>R# 3</u>
Meter ID:	CM 46	CM 46	CM 46
Pitot ID:	6969	6969	6969
Filter ID:	6555	8385	8373
Filter Pre-Weight (g):	0.46347	0.44546	0.44560
Nozzle Diameter ("):	0.357	0.357	0.357
Meter Cal Factor (Y):	1.001	1.001	1.001
Meter Orifice Setting (DH):	1.751	1.751	1.751
Nozzle Kit ID:	Glass 10	Glass 10	Glass 10
Individual Nozzle ID:	1048	1048	1048
Pre Pitot Leak Check:	0.000 @ 4.0 "H2O	0.000 @ 4.1 "H2O	0.000 @ 3.8 "H2O
Post Pitot Leak Check:	0.000 @ 4.1 "H2O	0.000 @ 3.8 "H2O	0.000 @ 4.2 "H2O
Pre Nozzle Leak Check:	0.000 @ 18 "Hg	0.000 @ 16 "Hg	0.000 @ 15 "Hg
Post Nozzle Leak Check:	0.000 @ 16 "Hg	0.000 @ 17 "Hg	0.000 @ 16 "Hg
Barometric Pressure, "Hg:	25.299	25.299	25.299
Static Pressure, "H2O:	0.7	0.7	0.7
CO2 %:	0	0	0
O2 %:	20.9	20.9	20.9

Comments:







### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC  
 Plant: Carson City

Date: 4/27/23  
 Test Location: System 5  
 Test Method: S

Test Number: 1  
 Operator: TMM Test Tech: RJB  
 Page Number: 1 of 1

Port-Point #	Time	(ΔP)	K' = _____ K' x ΔP	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	K-Calcs (Optional)			
												Square Root, ΔP	Meter Rate, Cubic Feet/ Min.	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	7:10	0.22	3.68	46.839	72	46	46	7	263	264	48				
-2	7:14	0.24	4.02	51.390	72	47	47	7	244	257	40				
-3	7:19	0.25	4.14	56.150	74	47	47	7	242	253	41				
-4	7:22	0.24	4.02	60.990	74	48	48	7	245	257	41				
-5	7:26	0.23	3.95	65.770	74	50	50	5	254	254	41				
-6	7:30	0.18	3.01	70.460	74	51	51	5	254	253	41				
-7	7:34	0.15	2.61	74.630	74	53	53	5	254	254	43				
-8	7:38	0.11	1.84	78.470	74	54	54	4	252	254	44				
-9	7:42	0.12	2.01	81.780	74	55	55	4	254	254	44				
-10	7:46	0.13	2.18	85.180	75	56	56	4	254	254	44				
-4	7:50	0.11	1.84	88.740	75	57	57	4	254	254	45				
-12	7:54	0.10	1.67	92.060	76	59	59	3	254	254	46				
	7:58			95.165											
2-1	8:02	0.20	3.35	98.165	76	60	60	5.5	252	255	52				
-2	8:06	0.22	3.68	99.620	76	62	62	6	254	254	44				
-3	8:10	0.22	3.68	104.240	77	63	63	6	254	254	45				
-4	8:14	0.22	3.68	108.990	76	65	65	6	254	255	45				
-5	8:18	0.22	3.68	113.730	76	66	66	6	253	254	45				
-6	8:22	0.19	3.01	118.410	77	67	67	5	254	254	46				
-7	8:26	0.15	2.18	122.640	77	68	68	4	252	253	45				
-8	8:30	0.08	1.34	126.300	78	70	70	2	254	253	46				
-9	8:34	0.08	1.51	129.220	78	70	70	2	254	253	46				
-10	8:38	0.07	1.51	132.260	78	72	72	2	253	253	47				
-11	8:42	0.07	1.17	135.330	78	72	72	2	253	253	47				
-12	8:46	0.04	0.67	138.040	80	73	73	1	254	254	48				
	8:50			140.048											



**IMPINGER WEIGHT SHEET**

PLANT: PCC  
 UNIT NO: System 5  
 LOCATION: Carson City  
 DATE: 4/27/23  
 TEST NO: 1  
 METHOD: 5  
 WEIGHED/MEASURED BY: JMM

Scale ID Number LV3  
 Scale Calibration Check Date: 4/27/23  
 Scale Calibration Check (see QS-6.05C for procedure)  
 must be within ± 0.5g of certified mass  
 200 grams 199.9  
 500 grams 499.9  
 750 grams 699.8

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	710.1	702.0		PI
IMPINGER 2	742.8	742.0		DI
IMPINGER 3	661.5	661.2		Empty
IMPINGER 4	825.7	821.6		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                                                                                
                             FINAL TOTAL      INITIAL TOTAL      TOTAL IMPINGER GAIN

SILICA                                                                                        
                             FINAL TOTAL      INITIAL TOTAL      TOTAL SILICA GAIN

### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PC  
 Plant: Carson City

Date: 4/27/23  
 Test Location: System 5  
 Test Method: S

Test Number: 2  
 Operator: Jwm Test Tech: RB  
 Page Number: 1 of 1

Port-Point #	Time	(ΔP)	K <sup>1</sup> = K <sup>1</sup> x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	K-Calcs (Optional)				
												Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	9:12	0.20	3.35	40.109	79	77	77	6.5	246	263	51					
2	9:16	0.19	3.01	44.710	80	77	77	6.5	253	257	48					
3	9:20	0.22	3.68	48.930	80	79	78	7	252	253	50					
4	9:24	0.22	3.68	53.450	80	78	78	7	252	252	51					
5	9:28	0.05	0.94	58.620	74	80	80	2	252	251	50					
6	9:32	0.05	0.94	61.040	74	80	80	2	252	252	50					
7	9:36	0.24	4.02	63.310	81	80	80	7	251	253	50					
8	9:40	0.23	3.85	68.350	81	81	81	7	251	251	50					
9	9:44	0.23	3.85	73.240	80	81	81	7	251	252	51					
10	9:48	0.22	3.68	78.240	80	81	81	7	251	252	52					
11	9:52	0.20	3.35	83.120	80	82	82	7	251	252	52					
12	9:56	0.20	3.35	87.710	80	82	82	7	252	251	52					
	10:00			92.335												
2-1	10:00	0.22	3.68	92.335	80	83	83	8	251	251	55					
2	10:14	0.23	3.85	97.710	81	83	83	8	250	252	48					
3	10:18	0.25	4.19	102.150	81	83	83	8	250	251	51					
4	10:22	0.24	4.02	107.320	81	83	83	8	251	251	51					
5	10:26	0.24	4.02	112.400	81	84	84	8	251	251	52					
6	10:30	0.23	3.85	117.440	81	84	84	8	251	251	52					
7	10:34	0.22	3.68	122.420	81	85	85	8	253	251	52					
8	10:38	0.20	3.35	127.270	81	85	85	7.5	251	251	52					
9	10:42	0.19	3.18	131.930	82	85	85	7	252	251	52					
10	10:46	0.14	2.34	136.420	82	86	86	5	251	252	52					
11	10:50	0.13	2.18	140.370	83	86	86	5	251	252	52					
12	10:54	0.12	2.01	144.120	81	86	86	5	252	252	52					
	10:58			147.744												



**IMPINGER WEIGHT SHEET**

PLANT: PCC Scale ID Number LV3  
 UNIT NO: System 5 Scale Calibration Check Date: 4/27/23  
 LOCATION: Carson City Scale Calibration Check (see QS-6.05C for procedure)  
 DATE: 4/27/23 must be within ± 0.5g of certified mass  
 TEST NO: 2 250 grams 198.9  
 METHOD: 5 500 grams 499.9  
 WEIGHED/MEASURED BY: TMM 700 grams 699.9

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	716.4	710.1		DI
IMPINGER 2	743.1	742.8		DI
IMPINGER 3	662.0	661.5		Empty
IMPINGER 4	896.3	878.5		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS          FINAL TOTAL               INITIAL TOTAL               TOTAL IMPINGER GAIN

SILICA          FINAL TOTAL               INITIAL TOTAL               TOTAL SILICA GAIN

### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: 7CC  
 Plant: Carson City

Date: 4/27/23  
 Test Location: System 5  
 Test Method: S

Test Number: 3  
 Operator: TJM Test Tech: RB  
 Page Number: 1 of 1

Port-Point #	Time	ΔP	K <sup>1</sup> = K <sup>1</sup> x ΔP	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	K-Calcs (Optional)				
												Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	11:20	0.20	3.35	48.104	85	88	88	6	254	254	60					
-2	11:24	0.20	3.35	52.750	82	88	88	6	250	252	54					
-3	11:28	0.19	3.18	57.400	81	88	88	5	251	261	56					
-4	11:32	0.10	1.67	61.920	86	88	88	3	251	252	54					
-5	11:36	0.10	1.67	65.220	86	87	88	3	247	252	56					
-6	11:40	0.08	1.34	68.480	85	87	87	3	250	252	57					
-7	11:44	0.12	2.01	71.450	85	87	87	4	251	251	57					
-8	11:48	0.11	1.84	75.080	84	90	90	4	251	252	57					
-9	11:52	0.10	1.67	78.550	84	90	90	3	251	250	57					
-10	11:56	0.10	1.67	81.930	83	91	91	3	252	252	57					
-11	12:00	0.11	1.84	85.210	84	91	91	3.5	252	251	58					
-12	12:04	0.11	1.84	88.690	83	92	92	3.5	251	251	58					
	12:08			92.179												
2-1	12:18	0.25	4.19	92.179	87	93	93	7	250	251	62					
-2	12:22	0.24	4.02	97.450	86	93	93	7	251	251	60					
-3	12:26	0.24	4.02	102.570	86	93	93	7	252	250	60					
-4	12:30	0.23	3.85	107.730	86	93	93	6.5	251	251	60					
-5	12:34	0.24	4.02	112.760	86	93	93	7	250	251	60					
-6	12:38	0.23	3.85	117.920	86	94	94	6.5	252	251	61					
-7	12:42	0.22	3.68	122.850	85	94	94	6	250	251	60					
-8	12:46	0.20	3.35	127.990	86	94	94	5.5	251	251	61					
-9	12:50	0.19	3.18	132.590	86	94	94	5	252	252	61					
-10	12:54	0.16	2.68	137.220	86	94	94	4	251	252	62					
-11	12:58	0.15	2.51	141.390	86	95	95	4	252	251	62					
-12	13:02	0.14	2.34	145.480	86	95	95	3	251	251	62					
	13:06			149.494												



**IMPINGER WEIGHT SHEET**

PLANT: PCC  
 UNIT NO: System 5  
 LOCATION: Carson City  
 DATE: 4/27/23  
 TEST NO: 3  
 METHOD: 5  
 WEIGHED/MEASURED BY: JWM

Scale ID Number LV3  
 Scale Calibration Check Date: 4/27/23  
 Scale Calibration Check (see QS-6.05C for procedure)  
 must be within  $\pm 0.5g$  of certified mass  
 250 grams 199.9  
 500 grams 499.8  
 750 grams 699.8

Circle One:	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	722.2	716.4		DI
IMPINGER 2	743.4	743.1		DI
IMPINGER 3	662.6	662.0		Empty
IMPINGER 4	896.1	886.3		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS  
FINAL TOTAL      INITIAL TOTAL      TOTAL IMPINGER GAIN

SILICA  
FINAL TOTAL      INITIAL TOTAL      TOTAL SILICA GAIN



**Isokinetic Sampling Cover Sheet**

Client:	PCC Structures	Pitot Tube Cp:	0.840
Facility:	Carson City Facility	Probe Length (Feet):	2
Test Location:	System 7	Probe Liner Material:	Quartz
Project #:	M231408	Sample Plane:	<input checked="" type="checkbox"/> Hrzl. or Vert.
Test Method(s):	5	Port Length ("):	0
Test Engineer:	AMS	Port Diameter ("):	2
Test Technician:	BODS	Port Type:	Hole in duct
Upstream Diameters:	3.8	Duct Shape:	<input checked="" type="checkbox"/> Circ. or <input checked="" type="checkbox"/> Rect
Downstream Diameters:	2.5	Diameter (Feet):	—
# of Ports Sampled:	5	Length (Feet):	1.416
# of Points per Port:	5	Width (Feet):	2.083
Source Condition:	Normal	Duct Area (Sq. Feet):	2.950
Diluent Model/SN:	NA	Minutes per Point:	4
Mid Gas ID/concentration:	NA Ambient	1%CO2	%O2
High Gas ID/concentration:	NA Ambient	1%CO2	%O2
Moisture Balance ID:	LV4	Total Traverse Points:	25
		Test Length (Min.):	100
		Train Type:	Anderson

	R# 1	R# 2	R# 3
Meter ID:	CM45	CM45	CM45
Pitot ID:	3002	3002	3002
Filter ID:	8372 8386	8375	8372
Filter Pre-Weight (g):	0.4405 0.4483	0.44624	0.44053
Nozzle Diameter ("):	0.345	0.345	0.345
Meter Cal Factor (Y):	0.999	0.999	0.999
Meter Orifice Setting (ΔH):	1.687	1.687	1.687
Nozzle Kit ID:	Quartz #5	Quartz #5	Quartz #5
Individual Nozzle ID:	#108	#198	#108
Pre Pitot Leak Check:	0.00 @ 4 "H <sub>2</sub> O	0.00 @ 5 "H <sub>2</sub> O	0.00 @ 5 "H <sub>2</sub> O
Post Pitot Leak Check:	0.00 @ 5 "H <sub>2</sub> O	0.00 @ 5 "H <sub>2</sub> O	@ "H <sub>2</sub> O
Pre Nozzle Leak Check:	0.000 @ 12 "Hg	0.000 @ 13 "Hg	0.000 @ 12 "Hg
Post Nozzle Leak Check:	0.000 @ 13 "Hg	0.000 @ 12 "Hg	@ "Hg
Barometric Pressure, "Hg:	25.299	25.299	25.299
Static Pressure, "H <sub>2</sub> O:	+ 0.1	+ 0.1	+ 0.1
CO <sub>2</sub> %:	Ambient	Ambient	Ambient
O <sub>2</sub> %:	Ambient	Ambient	Ambient

Comments:



### Volumetric Flow Rate Determination Field Data Sheet

Project Number: M231408  
 Client: PCC Structural  
 Test Location: System 7  
 Source Condition: Normal  
 Test Engineer: AMS

Date: 04/27/23  
 Test Number: PreFlow/Null Point  
 Start Time: 5:55  
 End Time: 6:10  
 Test Tech: Rods

Duct Diameter 1.686 ft      Upstream Disturbance, Diameters 3.8  
 Flue Area 2.250 ft<sup>2</sup>      Downstream Disturbance, Diameters 2.5  
 Port Length 0 " Port Size 3 " Port Type Flange Pitot ID 3002 Pitot Coefficient (Cp) .840  
 P<sub>bar</sub> 25.899 "Hg      CO<sub>2</sub> % \_\_\_\_\_      Wet Bulb Temp \_\_\_\_\_      Leak Checks Passed@  
 Static 0.1 "H<sub>2</sub>O      O<sub>2</sub> % \_\_\_\_\_      Dry Bulb Temp \_\_\_\_\_      Pre 5 Inches H<sub>2</sub>O  
 Static \_\_\_\_\_ "Hg      N<sub>2</sub> % \_\_\_\_\_      B<sub>ws</sub> \_\_\_\_\_      Post 4 Inches H<sub>2</sub>O  
 P<sub>s</sub> \_\_\_\_\_ "Hg      Meter No. CA45      Fluke # CA45      Umbilical ID \_\_\_\_\_

Port-Point #	ΔP	Temp. °F	√ΔP	Null Point Angle, Degrees	Port-Point #	ΔP	Temp. °F	Null Point Angle, Degrees
A-1	0.13	65		0	D-1	0.15	65	0
-2	0.14	65		1	-2	0.15	65	1
-3	0.15	65		2	-3	0.15	65	2
-4	0.13	65		2	-4	0.15	65	0
-5	0.13	65		1	-5	0.14	65	2
B-1	0.14	65		1	E-1	0.13	65	1
-2	0.15	65		1	-2	0.14	65	2
-3	0.15	65		2	-3	0.15	65	1
-4	0.14	65		0	-4	0.14	65	1
-5	0.14	65		2	-5	0.13	65	2
C-1	0.14	65		2				
-2	0.15	65		2				
-3	0.16	65		1				
-4	0.14	65		0				
-5	0.13	65		0				
<b>Average</b>								

44 x CO<sub>2</sub>% + .32 x O<sub>2</sub>% + .28 x N<sub>2</sub>% = \_\_\_\_\_ (Md)

(\_\_\_\_\_ Md x \_\_\_\_\_ 1-Bws) + (18 x \_\_\_\_\_ Bws) = \_\_\_\_\_ (Ms)

85.49 x \_\_\_\_\_ Cp x  $\sqrt{\frac{(\text{_____}) T_s \text{ } ^\circ\text{R}}{\text{_____ Ms} \times \text{_____ Ps}}}$  x \_\_\_\_\_  $\sqrt{\Delta P}$  = \_\_\_\_\_ ft/sec (Vs)  
 \_\_\_\_\_ Vs x \_\_\_\_\_ Flue Area x 60 = \_\_\_\_\_ acfm

17.647 x \_\_\_\_\_ acfm x  $\frac{P_s}{T_s \text{ } ^\circ\text{R}}$  = \_\_\_\_\_ scfm x 60 = \_\_\_\_\_ scfh



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC Structural  
 Plant: Carson City Plant

Date: 04/27/23  
 Test Location: System 7  
 Test Method: 5

Test Number: Run 1  
 Operator: Ans Test Tech: Proos  
 Page Number: 1 of 1

Port-Point #	Time	$\Delta P$	K <sup>1</sup> = K <sup>1</sup> x $\Delta P$ Orifice Setting ( $\Delta H$ )	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp. °F	Filter Temp. °F	Impinger Outlet Well Temp. °F	K-Calcs (Optional)				
												Square Root, $\Delta P$	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	0620	0.14	2.03	86.088	65	46	46	3	250	250	59					
-2	0624	0.14	2.03	89.500	65	46	46	3	249	251	54					
-3	0628	0.15	2.17	92.900	65	47	47	3	248	251	53					
-4	0632	0.14	2.03	96.420	65	47	47	3	249	250	53					
-5	0636	0.13	1.88	99.825	65	48	48	3	250	251	53					
—	0640	—	—	103.111	—	—	—	—	—	—	—					
2-1	0642	0.14	2.03	103.111	65	48	48	3	251	251	57					
-2	0646	0.15	2.17	106.525	66	49	49	3	249	249	54					
-3	0650	0.15	2.17	110.050	66	50	50	3	250	249	54					
-4	0654	0.15	2.17	113.600	66	50	50	3	250	250	54					
-5	0658	0.14	2.03	117.150	66	50	50	3	250	249	54					
—	0702	—	—	120.574	—	—	—	—	—	—	—					
3-1	0703	0.14	2.03	120.574	67	51	51	3	248	247	58					
-2	0707	0.15	2.17	124.150	67	51	51	3	249	252	54					
-3	0711	0.16	2.32	127.550	67	52	52	3	250	249	53					
-4	0715	0.15	2.17	131.225	67	52	52	3	248	250	53					
-5	0719	0.14	2.03	134.775	67	52	52	3	251	257	53					
—	0723	—	—	138.202	—	—	—	—	—	—	—					
4-1	0724	0.14	2.03	138.202	67	53	53	3	248	250	57					
-2	0728	0.15	2.17	141.650	68	53	53	3	250	249	53					
-3	0732	0.15	2.17	145.200	67	53	53	3	250	250	54					
-4	0736	0.14	2.03	148.750	67	54	54	3	251	249	53					
-5	0740	0.14	2.03	152.200	68	54	54	3	252	251	53					
—	0744	—	—	155.653	—	—	—	—	—	—	—					
5-1	0745	0.13	1.88	155.653	68	54	54	3	251	250	58					
-2	0749	0.14	2.03	158.975	69	54	54	3	249	251	54					
-3	0753	0.15	2.17	162.420	69	55	55	3	250	248	53					
-4	0757	0.13	1.88	165.975	69	55	55	3	248	251	53					
-5	0801	0.13	1.88	169.300	70	55	55	3	251	251	54					
—	—	—	—	172.622	—	—	—	—	—	—	—					

**IMPINGER WEIGHT SHEET**

PLANT: PCC Structures - Carson City

Scale ID Number LV4

UNIT NO: M231408

Scale Calibration Check Date: 4/29/23

LOCATION: System 7

Scale Calibration Check (see QS-6.05C for procedure)  
must be within ± 0.5g of certified mass

DATE: 04/27/23

<sup>200</sup>  
250 grams 200.0

TEST NO: Run 1

500 grams 500.1

METHOD: 15

<sup>300</sup>  
750 grams 700.1

WEIGHED/MEASURED BY: AMS

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	778.9	758.2		DI
IMPINGER 2	811.1	800.4		DI
IMPINGER 3	626.8	625.9		Exp
IMPINGER 4	881.3	876.8		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                                                                 
 FINAL TOTAL      INITIAL TOTAL      TOTAL IMPINGER GAIN

SILICA                                                                 
 FINAL TOTAL      INITIAL TOTAL      TOTAL SILICA GAIN



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC Structural's  
 Plant: Cannon City

Date: 04/27/23  
 Test Location: System 7  
 Test Method: M5

Test Number: Run 2  
 Operator: AMS Test Tech: Prods  
 Page Number: 1 of 1

Port-Point #	Time	(ΔP)	K1 = _____ K1 x ΔP	Meter Volume (Vm) ft³, Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp. °F	Filter Temp. °F	Impinger Outlet Well Temp. °F	K-Calcs (Optional)				
												Square Root, ΔP	K=	x	Theoretical Meter Volume, (Vm) ft³, per point	Theoretical Meter Volume, (Vm) ft³, total
1-1	0828	0.13	1.88	74.394	72	56	56	3	242	245	63					
-2	0832	0.14	2.03	77.725	73	56	56	3	251	253	49					
-3	0836	0.15	2.17	81.150	73	57	57	3	249	249	52					
-4	0840	0.14	2.03	84.725	73	57	57	3	249	250	52					
-5	0844	0.13	1.88	88.175	73	58	58	3	248	250	53					
—	0848	—	—	71.499	—	—	—	—	—	—	—					
2-1	0849	0.14	2.03	91.499	74	58	58	3	251	250	56					
-2	0853	0.15	2.17	94.950	74	59	59	3	250	248	54					
-3	0857	0.15	2.17	98.525	74	59	59	3	250	250	53					
-4	0901	0.14	2.03	102.100	75	60	60	3	257	251	53					
-5	0905	0.14	2.03	105.575	75	60	60	3	249	251	53					
—	0909	—	—	109.033	—	—	—	—	—	—	—					
3-1	0910	0.14	2.03	109.033	75	60	60	3	250	251	55					
-2	0914	0.15	2.17	112.500	76	61	61	3	253	251	53					
-3	0918	0.16	2.32	116.075	76	61	61	3	250	250	54					
-4	0922	0.15	2.17	119.775	77	62	62	3	248	250	55					
-5	0926	0.14	2.03	123.375	77	63	63	3	252	250	54					
—	0930	—	—	126.848	—	—	—	—	—	—	—					
4-1	0931	0.14	2.03	126.848	77	63	63	3	250	250	57					
-2	0935	0.14	2.03	130.325	77	64	64	3	250	251	54					
-3	0939	0.15	2.17	133.800	77	64	64	3	251	248	54					
-4	0943	0.15	2.17	137.400	77	65	65	3	250	249	54					
-5	0947	0.14	2.03	141.020	78	65	65	3	250	251	55					
—	0951	—	—	144.505	—	—	—	—	—	—	—					
5-1	0952	0.13	1.88	144.505	78	65	65	3	252	250	58					
-2	0956	0.14	2.03	147.875	78	66	66	3	257	248	54					
-3	1000	0.14	2.03	151.350	78	66	66	3	248	249	55					
-4	1004	0.14	2.03	154.850	78	66	66	3	249	249	55					
-5	1008	0.14	2.03	158.325	78	66	66	3	252	250	56					

**IMPINGER WEIGHT SHEET**

PLANT: PEC Structural - Carson City

Scale ID Number LV4

UNIT NO: System 7

Scale Calibration Check Date: 4/27/23

LOCATION: M231408

Scale Calibration Check (see QS-6.05C for procedure)  
must be within  $\pm 0.5g$  of certified mass

DATE: 04/27/23

<sup>200</sup>  
250 grams 200.0

TEST NO: Run 2

500 grams 500.1

METHOD: MS

<sup>700</sup>  
750 grams 700.1

WEIGHED/MEASURED BY: AMS

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	799.3	778.9		DI
IMPINGER 2	820.8	811.1		DI
IMPINGER 3	627.4	626.8		Empty
IMPINGER 4	886.2	881.3		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                                                                 
FINAL TOTAL      INITIAL TOTAL      TOTAL IMPINGER GAIN

SILICA                                                                 
FINAL TOTAL      INITIAL TOTAL      TOTAL SILICA GAIN



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC Structurals  
 Plant: Carson City

Date: 04/27/23  
 Test Location: System 7  
 Test Method: 15

Test Number: Run 3  
 Operator: AMS Test Tech: Prods  
 Page Number: 1 of 1

Port-Point #	Time	(ΔP)	K <sup>1</sup> = K <sup>1</sup> x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	K-Calcs (Optional)				
												Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	1020	0.13	1.88	63.847	81	67	67	3	253	252	61					
-2	1024	0.14	2.03	67.210	82	68	68	3	250	251	53					
-3	1038	0.15	2.17	70.700	82	68	68	3	249	250	54					
-4	1042	0.14	2.03	74.315	83	69	69	3	249	250	54					
-5	1046	0.14	2.03	77.810	83	69	69	3	251	250	54					
—	1050	—	—	81.303	—	—	—	—	—	—	—					
2-1	1051	0.14	2.03	81.303	83	70	70	3	251	249	58					
-2	1055	0.15	2.17	84.810	84	70	70	3	249	250	54					
-3	1059	0.15	2.17	88.420	84	71	71	3	250	250	54					
-4	1103	0.14	2.03	92.055	84	71	71	3	252	250	54					
-5	1107	0.14	2.03	95.560	84	71	71	3	251	250	54					
—	1111	—	—	99.062	—	—	—	—	—	—	—					
3-1	1112	0.14	2.03	99.062	84	72	72	3	249	250	57					
-2	1116	0.15	2.17	102.575	85	73	73	3	250	249	54					
-3	1120	0.15	2.17	106.220	85	73	73	3	248	249	54					
-4	1124	0.15	2.17	109.850	85	74	74	3	250	250	54					
-5	1128	0.15	2.17	113.495	86	74	74	3	252	251	54					
—	1132	—	—	117.136	—	—	—	—	—	—	—					
4-1	1133	0.14	2.03	117.136	86	75	75	3	251	248	58					
-2	1137	0.15	2.17	120.665	86	76	76	3	250	249	54					
-3	1141	0.15	2.17	124.310	87	77	77	3	250	249	55					
-4	1145	0.14	2.03	127.475	87	78	78	3	252	249	55					
-5	1149	0.14	2.03	131.505	87	78	78	3	251	250	55					
—	1153	—	—	135.056	—	—	—	—	—	—	—					
5-1	1154	0.13	1.88	135.056	87	79	79	3	248	250	54					
-2	1258	0.14	2.03	138.475	88	79	79	3	250	251	55					
-3	1202	0.14	2.03	142.020	88	79	79	3	251	249	56					
-4	1206	0.14	2.03	145.570	88	80	80	3	252	248	56					
-5	1210	0.14	2.03	149.110	88	80	80	3	250	249	57					
—	1214	—	—	152.669	—	—	—	—	—	—	—					



**IMPINGER WEIGHT SHEET**

PLANT: PCC Structures - M231408

Scale ID Number LV4

UNIT NO: Careen City

Scale Calibration Check Date: 04/27/23

LOCATION: System 7

Scale Calibration Check (see QS-6.05C for procedure)  
must be within ± 0.5g of certified mass

DATE: 04/27/23

<sup>200</sup>  
250 grams 200.0

TEST NO: Run 2

500 grams 500.1

METHOD: MS

<sup>700</sup>  
750 grams 700.1

WEIGHED/MEASURED BY: hrs

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	819.2	799.3		DI
IMPINGER 2	830.9	820.8		DI
IMPINGER 3	628.0	627.4		Empty
IMPINGER 4	890.1	886.2		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS  
                     FINAL TOTAL                           INITIAL TOTAL                           TOTAL IMPINGER GAIN

SILICA  
                     FINAL TOTAL                           INITIAL TOTAL                           TOTAL SILICA GAIN



Isokinetic Sampling Cover Sheet

Client:	PCC Structural	Pitot Tube Cp:	0.840
Facility:	Carson City Facility	Probe Length (Feet):	3
Test Location:	System 9	Probe Liner Material:	Quartz
Project #:	M231408	Sample Plane:	(Hrztl) or Vert.
Test Method(s):	5	Port Length ("):	0
Test Engineer:	AMS	Port Diameter ("):	3
Test Technician:	BODS	Port Type:	Hole in Duct
Upstream Diameters:	5	Duct Shape:	(Circ) or Rect.
Downstream Diameters:	9	Diameter (Feet):	1
# of Ports Sampled:	2	Length (Feet):	N/A
# of Points per Port:	6	Width (Feet):	N/A
Source Condition:	Normal	Duct Area (Sq. Feet):	0.785
Diluent Model/SN:	<del>SEE</del> N/A	Minutes per Point:	8
Mid Gas ID/concentration:	N/A Ambient	%CO2	%O2
High Gas ID/concentration:	N/A Ambient	%CO2	%O2
Moisture Balance ID:	LV4	Total Traverse Points:	12
		Test Length (Min.):	96
		Train Type:	Andersen, Quon

	R# 1	R# 2	R# 3
Meter ID:	CM13	CM13	CM13
Pitot ID:	3002	3002	3002
Filter ID:	6769	6761	6773
Filter Pre-Weight (g):	0.46865	0.46629	0.46592
Nozzle Diameter ("):	<del>0.345</del> 0.486	<del>0.345</del> 0.486	<del>0.345</del> 0.486
Meter Cal Factor (Y):	0.992	0.992	0.992
Meter Orifice Setting (ΔH):	1.520	1.520	1.520
Nozzle Kit ID:	Quartz #5	Quartz #5	Quartz #5
Individual Nozzle ID:	*108 *106	*108 *106	*108 *106
Pre Pitot Leak Check:	0.00 @ 4 "H2O	0.00 @ 5 "H2O	0.00 @ 4 "H2O
Post Pitot Leak Check:	0.00 @ 5 "H2O	0.00 @ 4 "H2O	0.00 @ 4 "H2O
Pre Nozzle Leak Check:	0.000 @ 14 "Hg	0.000 @ 14 "Hg	0.000 @ 13 "Hg
Post Nozzle Leak Check:	0.000 @ 14 "Hg	0.000 @ 13 "Hg	0.000 @ 13 "Hg
Barometric Pressure, "Hg:	25.34	25.34	25.34
Static Pressure, "H2O:	0	0	0
CO2 %:	Ambient	Ambient	Ambient
O2 %:	Ambient	Ambient	Ambient

Comments:







### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC Structural  
 Plant: Corsos City Facility

Date: 04/26/23  
 Test Location: System 9  
 Test Method: 5

Test Number: Run 1  
 Operator: AOS Test Tech: PODS  
 Page Number: 1 of 1

Port-Point #	Time	$\Delta P$	K <sup>1</sup> = K <sup>1</sup> x $\Delta P$ Orifice Setting ( $\Delta H$ )	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp, °F	Filter Temp, °F	Impinger Outlet Well Temp, °F	K-Calcs (Optional)			
												Square Root, $\Delta P$	K=	x	
														Meter Rate, Cubic Feet/ Min.	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point
1-1	0645	0.04	2.06	27.216	87	66	58	3	249	248	63				
-1	0649	0.04	2.06	30.840	87	66	58	3	250	250	57				
-2	0653	0.05	2.57	34.550	87	66	58	3	251	251	54				
-2	0657	0.05	2.57	38.650	87	66	58	3	251	252	52				
-3	0701	0.06	3.08	42.750	87	66	58	3	250	250	52				
-3	0705	0.06	3.08	47.250	87	66	58	3	248	251	51				
-4	0709	0.06	3.08	51.738	88	67	59	3	249	250	51				
-4	0713	0.06	3.08	56.225	88	68	60	3	248	250	51				
-5	0717	0.05	2.57	60.730	87	69	61	3	249	252	52				
-6	0721	0.05	2.57	64.850	87	70	63	3	250	251	52				
-6	0725	0.04	2.06	68.990	86	71	64	3	251	252	53				
-6	0729	0.04	2.06	72.700	85	72	65	3	251	251	53				
-	0733	-	-	76.411	-	-	-	-	-	-	-				
2-1	0737	0.04	2.06	76.411	86	71	66	3	247	250	58				
-1	0741	0.04	2.06	80.125	86	71	66	3	251	252	54				
-2	0745	0.05	2.57	83.850	88	71	66	3	250	251	53				
-2	0749	0.05	2.57	87.995	91	71	66	3	248	250	54				
-3	0753	0.06	3.08	92.125	91	71	66	3	249	250	54				
-3	0757	0.06	3.08	96.660	92	71	66	3	250	250	55				
-4	0801	0.05	2.57	101.185	93	71	67	3	252	250	54				
-4	0805	0.05	2.57	105.315	93	71	67	3	250	252	54				
-5	0809	0.05	2.06	109.450	92	71	67	3	248	250	54				
-5	0813	0.04	2.06	113.150	92	72	68	3	249	250	53				
-6	0817	0.04	2.06	116.850	91	72	68	3	251	249	53				
-6	0821	0.04	2.06	120.560	91	72	68	3	250	250	53				
-	0825	-	-	124.271	-	-	-	-	-	-	-				

**IMPINGER WEIGHT SHEET**

PLANT: PCC Scale ID Number LV4

PROJECT NO: M231408 Scale Calibration Check Date: 2

LOCATION: System 9 Scale Calibration Check (see QS-6.05C for procedure)

DATE: 4/24 <sup>200</sup> must be within ± 0.5g of certified mass  
250 grams 250.0

TEST NO: 1 500 grams 500.0

METHOD: 5 <sup>700</sup> 750 grams 750.1

WEIGHED/MEASURED BY: \_\_\_\_\_

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	784.5	761.1		Empty
IMPINGER 2	813.6	799.1		Empty
IMPINGER 3	628.9	628.3		DF
IMPINGER 4	888.1	882.4		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                             
FINAL TOTAL INITIAL TOTAL TOTAL IMPINGER GAIN

SILICA                             
FINAL TOTAL INITIAL TOTAL TOTAL SILICA GAIN



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC Structural  
 Plant: Carbon City Facility

Date: 04/26/23  
 Test Location: System 9  
 Test Method: 5

Test Number: Run 2  
 Operator: Ans Test Tech: Prods  
 Page Number: 1 of 1

Port-Point #	Time	ΔP	K <sup>1</sup> = K <sup>1</sup> x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp. °F	Filter Temp. °F	Impinger Outlet Well Temp. °F	K-Calcs (Optional)				
												Square Root, ΔP	K=	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	0840	0.04	2.06	25.457	90	68	68	3	247	246	54					
-1	0844	0.04	2.06	29.155	91	69	68	3	249	248	50					
-2	0848	0.05	2.57	32.865	92	70	68	3	250	249	48					
-2	0852	0.05	2.57	36.995	93	72	69	3	251	251	46					
-3	0856	0.06	3.08	41.145	94	74	69	3	252	250	48					
-3	0900	0.06	3.08	45.675	94	75	70	3	251	250	46					
-4	0904	0.06	3.08	50.238	93	76	70	3	250	250	47					
-4	0908	0.06	3.08	54.790	93	77	71	3	250	249	48					
-5	0912	0.05	2.57	59.360	93	77	71	3	251	251	48					
-5	0916	0.05	2.57	63.530	93	79	72	3	252	248	49					
-6	0920	0.04	2.06	67.720	94	80	74	3	250	249	50					
-6	0924	0.04	2.06	71.470	94	81	75	3	253	251	51					
—	0928	—	—	75.212	—	—	—	—	—	—	—					
2-1	0932	0.04	2.06	75.212	94	81	75	3	247	249	54					
-1	0936	0.04	2.06	78.975	94	81	76	3	249	250	51					
-2	0940	0.05	2.57	82.725	94	81	77	3	250	249	50					
-2	0944	0.05	2.57	86.925	94	81	77	3	252	249	50					
-3	0948	0.05	2.57	91.145	94	82	78	3	251	248	50					
-3	0952	0.05	2.57	95.350	94	82	78	3	250	252	51					
-4	0956	0.05	2.57	99.575	95	84	79	3	247	251	51					
-4	1000	0.05	2.57	103.775	95	85	79	3	249	250	51					
-5	1004	0.05	2.57	108.010	95	85	80	3	248	251	52					
-5	1008	0.05	2.57	111.950	94	86	81	3	250	250	52					
-6	1012	0.04	2.06	116.200	94	86	81	3	250	250	52					
-6	1016	0.04	2.06	120.000	94	86	81	3	250	251	52					
✓	1020	—	—	123.789	—	—	—	—	—	—	—					

**IMPINGER WEIGHT SHEET**

PLANT: PCC Structures Scale ID Number LV4  
 UNIT NO: M231408 Scale Calibration Check Date: 4/26/23  
 LOCATION: System 9 Scale Calibration Check (see QS-6.05C for procedure)  
 DATE: 4/26/23 must be within ± 0.5g of certified mass  
 TEST NO: B2 200 grams 200.0  
 METHOD: 5 500 grams 500.0  
 750 grams 750.1  
 WEIGHED/MEASURED BY: ACS

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	806.2	784.5		DI
IMPINGER 2	826.5	813.6		DI
IMPINGER 3	629.5	628.9		Empty
IMPINGER 4	893.7	888.1		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS  
 FINAL TOTAL      INITIAL TOTAL      TOTAL IMPINGER GAIN

SILICA  
 FINAL TOTAL      INITIAL TOTAL      TOTAL SILICA GAIN



### Isokinetic Sampling Field Data Sheet

Project Number: M231408  
 Client: PCC Structural  
 Plant: Carson City Facility

Date: 01/26/23  
 Test Location: System 9  
 Test Method: 5

Test Number: R3  
 Operator: AvS Test Tech: Rods  
 Page Number: 1 of 1

Port-Point #	Time	ΔP	K <sup>1</sup> = K <sup>1</sup> x ΔP Orifice Setting (ΔH)	Meter Volume (V <sub>m</sub> ) ft <sup>3</sup> , Actual	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, "Hg	Probe Temp. °F	Filter Temp. °F	Impinger Outlet Well Temp. °F	K-Calcs (Optional)				
												Square Root, ΔP	K =	x	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , per point	Theoretical Meter Volume, (V <sub>m</sub> ) ft <sup>3</sup> , total
1-1	1035	0.04	2.06	28.211	95	83	83	3	245	244	63					
-1	1039	0.04	2.06	29.000	96	84	83	3	251	247	54					
-2	1043	0.05	2.57	32.795	97	86	83	3	249	250	53					
-2	1047	0.05	2.57	37.025	97	87	84	3	250	249	52					
-3	1051	0.06	3.08	41.275	97	88	85	3	252	250	53					
-7	1055	0.06	3.08	45.925	97	89	85	3	249	251	54					
-4	1059	0.06	2.57	50.600	97	90	86	3	248	251	54					
-4	1103	0.05	2.57	54.850	97	91	86	3	250	250	54					
-5	1107	0.04	2.06	59.125	97	91	87	3	248	250	54					
-5	1111	0.04	2.06	62.950	97	92	88	3	249	251	55					
-6	1115	0.04	2.06	66.775	97	92	88	3	250	251	55					
-6	1119	0.04	2.06	70.600	97	92	88	3	251	251	55					
—	1123	—	—	74.431	—	—	—	—	—	—	—					
2-1	1127	0.04	2.06	74.431	96	93	89	3	250	250	60					
-1	1131	0.04	2.06	78.275	96	94	90	3	251	253	56					
-2	1135	0.05	2.57	82.125	96	94	90	3	253	252	55					
-2	1139	0.05	2.57	86.420	95	95	91	3	252	248	55					
-3	1143	0.05	2.57	90.725	95	95	91	3	249	247	54					
-3	1147	0.05	2.57	95.040	95	95	91	3	253	247	54					
-4	1151	0.05	2.57	99.350	94	95	92	3	252	253	54					
-4	1155	0.05	2.57	103.675	94	95	92	3	253	247	54					
5	1159	0.04	2.06	107.990	94	95	92	3	252	251	54					
-5	1203	0.04	2.06	111.850	94	96	92	3	252	252	55					
-6	1207	0.04	2.06	115.725	94	96	93	3	251	249	55					
-6	1211	0.04	2.06	119.575	95	96	93	3	252	251	55					
—	1215	—	—	123.454	—	—	—	—	—	—	—					

**IMPINGER WEIGHT SHEET**

PLANT: PCC Structural Scale ID Number LV4

UNIT NO: M231408 Scale Calibration Check Date: 04/26/23

LOCATION: System 9 Scale Calibration Check (see QS-6.05C for procedure)  
must be within ± 0.5g of certified mass

DATE: 04/26/23 ~~250~~ grams 200.9

TEST NO: R3 500 grams 500.0

METHOD: M5 ~~750~~ grams 700.1

WEIGHED/MEASURED BY: AMS

	FINAL WEIGHT	INITIAL WEIGHT	IMPINGER	IMPINGER
Circle One:	MLS / GRAMS	MLS / GRAMS	GAIN	CONTENTS
IMPINGER 1	826.6	806.2		DI
IMPINGER 2	840.7	826.5		DI
IMPINGER 3	629.7	629.5		Empty
IMPINGER 4	898.8	893.7		Silica
IMPINGER 5				
IMPINGER 6				
IMPINGER 7				
IMPINGER 8				

IMPINGERS                                                                 
FINAL TOTAL INITIAL TOTAL TOTAL IMPINGER GAIN

SILICA                                                                 
FINAL TOTAL INITIAL TOTAL TOTAL SILICA GAIN



# Visible Emissions Observation Record Form

Facility Location:  
PDC Structural's  
Corson City Facility  
M231408  
System 3

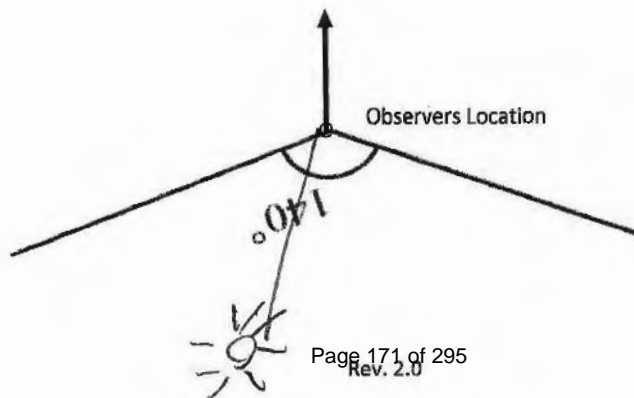
Date: 04/25/23

Observer: RB  
 Observation Start: 7:30  
 End: 7:36

Observation Point:	<<	0	15	30	45	Notes	>>	0	15	30	45	Notes
	0	0	0	0	0		30					
	1	0	0	0	0		31					
	2	0	0	0	0		32					
	3	0	0	0	0		33					
	4	0	0	0	0		34					
	5	0	0	0	0		35					
	6	0	0	0	0		36					
	7						37					
	8						38					
	9						39					
	10						40					
	11						41					
	12						42					
	13						43					
	14						44					
	15						45					
	16						46					
	17						47					
	18						48					
	19						49					
	20						50					
	21						51					
	22						52					
	23						53					
	24						54					
	25						55					
	26						56					
	27						57					
	28						58					
	29						59					
Distance from Source: <u>60</u> ft.												
Source Height: <u>30</u> ft.												
Emission Color: <u>Clear</u>												
Background: <u>Clear Sky</u>												
Sky Condition: <u>Clear</u>												
Sun Position: <u>Back</u>												
Temperature: <u>41</u> °F												
Wind Direction: <u>NE</u> at <u>4</u> mph												
Reading Conditions: <u>Good Normal</u>												
Operating Conditions: <u>NORMAL</u>												
Plume Description: <u>NE</u>												
Attached or Detached												
Observer's Name: <u>Ricardo Boramegra</u>												
Observer's Signature: <u>[Signature]</u>												
Date: <u>4/25</u>												
Organization: <u>Mostardi Platt</u>												
Certified By: <u>Opague</u>												
Date: <u>3/5/23</u>												
Additional Comments:												

○ Emission Point

Compass Heading





# Visible Emissions Observation Record Form

Facility Location:  
PLC Structures  
Carson City facility  
M23 1408  
System J

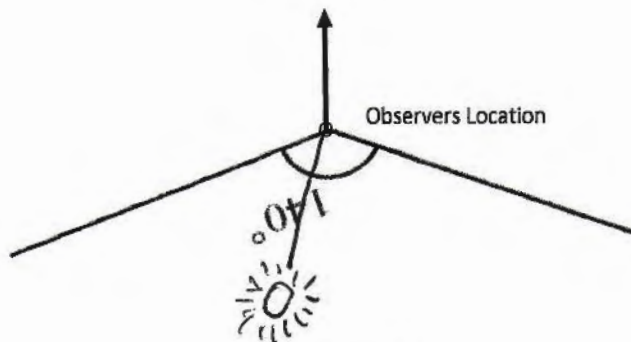
Date: 4/28/23

Observer: RB  
 Observation Start: 8:15  
 End: 8:21

Observation Point:	<<	0	15	30	45	Notes	>>	0	15	30	45	Notes
		0	0	0	0			30				
		1	0	0	0			31				
		2	0	0	0			32				
		3	0	0	0			33				
Distance from Source: <u>60</u> ft.		4	0	0	0			34				
Source Height: <u>30</u> ft.		5	0	0	0			35				
Emission Color: <u>Clear</u>		6	0	0	0			36				
Background: <u>Sky</u>		7						37				
		8						38				
Sky Condition: <u>Clear</u>		9						39				
		10						40				
Sun Position: <u>Back</u>		11						41				
Temperature: <u>45</u> °F		12						42				
Wind Direction: <u>NE</u> at <u>5</u> mph		13						43				
Reading Conditions: <u>Normal</u>		14						44				
		15						45				
Operating Conditions: <u>Normal</u>		16						46				
		17						47				
		18						48				
		19						49				
		20						50				
Plume Description:		21						51				
		22						52				
Attached or Detached		23						53				
Observer's Name:		24						54				
<u>Ricardo Bacanesra</u>		25						55				
Observer's Signature:	Date:	26						56				
<u>[Signature]</u>	<u>4/28/23</u>	27						57				
Organization:		28						58				
<u>Mostardi Platt</u>		29						59				
Certified By:	Date:	Additional Comments:										
<u>Opague</u>	<u>5/2/23</u>											

○ Emission Point

Compass Heading





# Visible Emissions Observation Record Form

Facility Location:  
PCC Structures  
Carson City Facility  
M 231408  
System 3

Date: 04/25/23

Observer: RB  
 Observation Start: 9:00  
 End: 9:06

Observation Point:	>>	0	15	30	45	Notes	<<	0	15	30	45	Notes
		0	0	0	0			30				
		1	0	0	0			31				
		2	0	0	0			32				
		3	0	0	0			33				
		4	0	0	0			34				
		5	0	0	0			35				
		6	0	0	0			36				
		7						37				
		8						38				
		9						39				
		10						40				
		11						41				
		12						42				
		13						43				
		14						44				
		15						45				
		16						46				
		17						47				
		18						48				
		19						49				
		20						50				
		21						51				
		22						52				
		23						53				
		24						54				
		25						55				
		26						56				
		27						57				
		28						58				
		29						59				

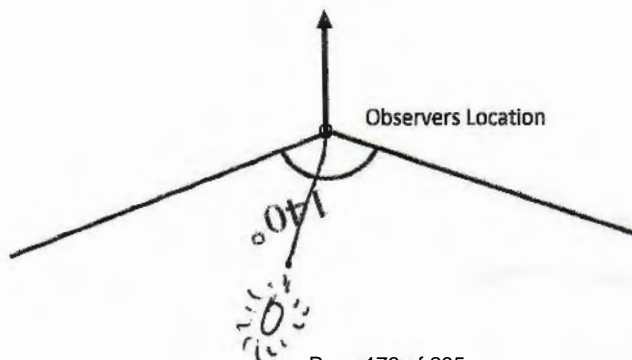
Distance from Source: <u>0</u> ft.	4	0	0	0	0	34
Source Height: <u>30</u> ft.	5	0	0	0	0	35
Emission Color: <u>Clear</u>	6	0	0	0	0	36
Background: <u>SKY</u>	7					37
Sky Condition: <u>Clear</u>	8					38
Sun Position: <u>Back</u>	9					39
Temperature: <u>47</u> °F	10					40
Wind Direction: <u>E</u> at <u>10</u> mph	11					41
Reading Conditions: <u>Normal</u>	12					42
	13					43
	14					44
	15					45
	16					46
Operating Conditions: <u>Normal</u>	17					47
	18					48
	19					49
	20					50
Plume Description: _____	21					51
	22					52
Attached or Detached	23					53
Observer's Name: <u>Ricardo Bocanegra</u>	24					54
Observer's Signature: <u>[Signature]</u>	25					55
Date: <u>4/25/23</u>	26					56
Organization: <u>Mostardi Platt</u>	27					57
	28					58
	29					59

Certified By: <u>[Signature]</u>	Date: <u>5/21/23</u>	Additional Comments:
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○ Emission Point

Compass Heading





# Visible Emissions Observation Record Form

Facility Location:  
PCC Structural  
Carson City facility  
M231408  
System 2

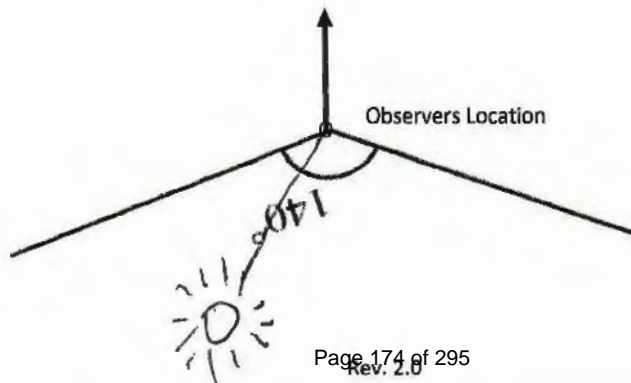
Date: 04/25/23

Observer: RB  
 Observation Start: 7:36  
 End: 7:43

Observation Point:	>>	0	15	30	45	Notes	>>	0	15	30	45	Notes
		0	0	0	0		30					
		1	0	0	0		31					
		2	0	0	0		32					
		3	0	0	0		33					
		4	0	0	0		34					
		5	0	0	0		35					
		6	0	0	0		36					
		7					37					
		8					38					
		9					39					
		10					40					
		11					41					
		12					42					
		13					43					
		14					44					
		15					45					
		16					46					
		17					47					
		18					48					
		19					49					
		20					50					
		21					51					
		22					52					
		23					53					
		24					54					
		25					55					
		26					56					
		27					57					
		28					58					
		29					59					
Distance from Source: <u>60</u> ft.												
Source Height: <u>30</u> ft.												
Emission Color: <u>Clear</u>												
Background: <u>Sky</u>												
Sky Condition: <u>Clear</u>												
Sun Position: <u>Back</u>												
Temperature: <u>41</u> °F												
Wind Direction: <u>NE</u> at <u>4</u> mph												
Reading Conditions: <u>Normal</u>												
Operating Conditions: <u>Normal</u>												
Plume Description: <u>NE</u>												
Attached or Detached												
Observer's Name: <u>Ricardo Bucanegra</u>												
Observer's Signature: <u>[Signature]</u>	Date:											
	<u>4/25/23</u>											
Organization: <u>Mostardi Platt</u>												
Certified By: <u>D. Pogue</u>	Date:											
	<u>5/21/23</u>	Additional Comments:										

○ Emission Point

Compass Heading





# Visible Emissions Observation Record Form

Facility Location:

PCL  
Carson City Facility  
M231408  
System 2

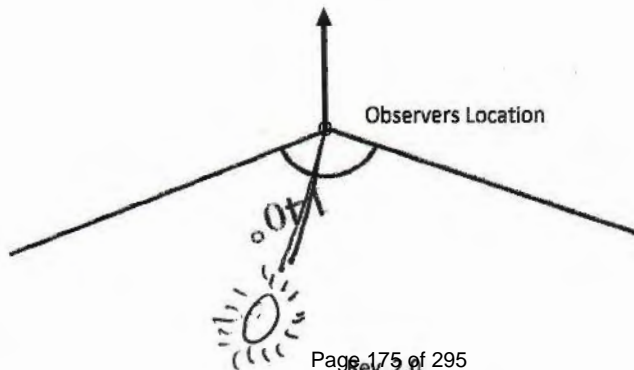
Date: 04/25/23

Observer: RB  
 Observation Start: 8:25  
 End: 8:31

Observation Point:	>>	0	15	30	45	Notes	>>	0	15	30	45	Notes
		0	0	0	0			30				
		1	0	0	0			31				
		2	0	0	0			32				
		3	0	0	0			33				
		4	0	0	0			34				
		5	0	0	0			35				
		6						36				
		7						37				
		8						38				
		9						39				
		10						40				
		11						41				
		12						42				
		13						43				
		14						44				
		15						45				
		16						46				
		17						47				
		18						48				
		19						49				
		20						50				
		21						51				
		22						52				
		23						53				
		24						54				
		25						55				
		26						56				
		27						57				
		28						58				
		29						59				
Distance from Source: <u>60</u> ft.												
Source Height: <u>30</u> ft.												
Emission Color: <u>Clear</u>												
Background: <u>sky</u>												
Sky Condition: <u>Clear</u>												
Sun Position: <u>Back</u>												
Temperature: <u>45</u> °F												
Wind Direction: <u>NE</u> at <u>5</u> mph												
Reading Conditions: <u>Normal</u>												
Operating Conditions: <u>Normal</u>												
Plume Description:												
Attached or Detached												
Observer's Name: <u>Ricardo Bocanegra</u>												
Observer's Signature: <u>[Signature]</u>												
Date: <u>4/25/23</u>												
Organization: <u>Mostardi Platt</u>												
Certified By: <u>Opaque</u>												
Date: <u>5/21/23</u>												
Additional Comments:												

○ Emission Point

Compass Heading





# Visible Emissions Observation Record Form

Facility Location:

PCG Structural  
Carson City Facility  
M23 1408  
System 2

Date: 04/25/23

Observer: RJB

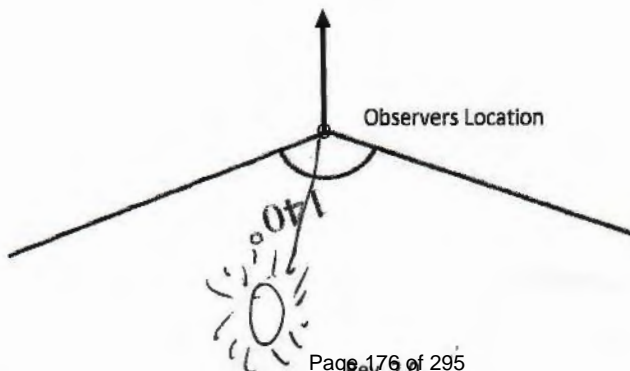
Observation Start: 4:08

End: 9:14

Observation Point:	>>	0	15	30	45	Notes	<<	0	15	30	45	Notes
		0	0	0	0			30				
		1	0	0	0			31				
		2	0	0	0			32				
		3	0	0	0			33				
Distance from Source: <u>60</u> ft.		4	0	0	0			34				
Source Height: <u>30</u> ft.		5	0	0	0			35				
Emission Color: <u>Clear</u>		6	0	0	0			36				
Background: <u>Sky</u>		7						37				
		8						38				
Sky Condition: <u>Clear</u>		9						39				
		10						40				
Sun Position: <u>Back</u>		11						41				
Temperature: <u>47</u> °F		12						42				
Wind Direction: <u>E</u> at <u>10</u> mph		13						43				
Reading Conditions: <u>Normal</u>		14						44				
		15						45				
Operating Conditions: <u>Normal</u>		16						46				
		17						47				
		18						48				
		19						49				
		20						50				
Plume Description:		21						51				
		22						52				
Attached or Detached		23						53				
Observer's Name:		24						54				
<u>Ricardo Bocanesra</u>		25						55				
Observer's Signature: <u>[Signature]</u>	Date:	26						56				
	<u>4/25/23</u>	27						57				
Organization:		28						58				
<u>Mostardi Platt</u>		29						59				
Certified By: <u>[Signature]</u>	Date: <u>4/21/23</u>	Additional Comments:										

○ Emission Point

Compass Heading





# Visible Emissions Observation Record Form

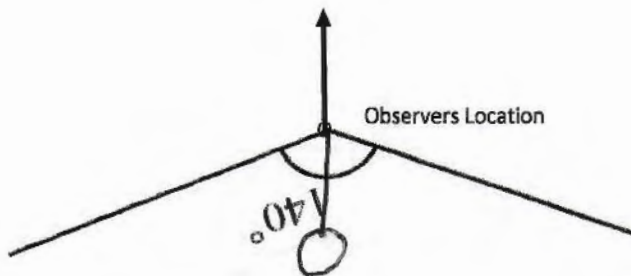
Facility Location: PCC Carson City  
M231408  
System 1  
Rent

Date: 4/26/23

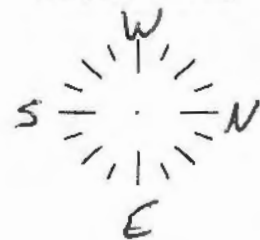
Observer: KW  
 Observation Start: 7:10  
 End: 7:15

Observation Point:	>>	0	15	30	45	Notes	>>	0	15	30	45	Notes
<u>~30' E of stack</u>												
	0	0	0	0	0		30					
	1	0	0	0	0		31					
	2	0	0	0	0		32					
	3	0	0	0	0		33					
Distance from Source: <u>~30</u> ft.	4	0	0	0	0		34					
Source Height: <u>~10</u> ft.	5	0	0	0	0		35					
Emission Color: <u>White steam</u>	6						36					
Background: <u>sky</u>	7						37					
	8						38					
Sky Condition: <u>clear</u>	9						39					
	10						40					
Sun Position: <u>E</u>	11						41					
Temperature: <u>40</u> °F	12						42					
Wind Direction: <u>SE</u> at <u>1</u> mph	13						43					
Reading Conditions: <u>Good</u>	14						44					
	15						45					
	16						46					
Operating Conditions: <u>Normal</u>	17						47					
	18						48					
	19						49					
	20						50					
Plume Description: <u>Cone</u>	21						51					
	22						52					
<u>Attached</u> or Detached	23						53					
Observer's Name: <u>Kyle Jones</u>	24						54					
	25						55					
Observer's Signature: <u>[Signature]</u>	26						56					
Date: <u>4/26/23</u>	27						57					
Organization: <u>Mostardi Platt</u>	28						58					
	29						59					
Certified By: <u>[Signature]</u>	Additional Comments:											
Date: <u>3/21/23</u>												

○ Emission Point



Compass Heading





# Visible Emissions Observation Record Form

Facility Location: PCC Carson City  
M231408  
System 1  
A2

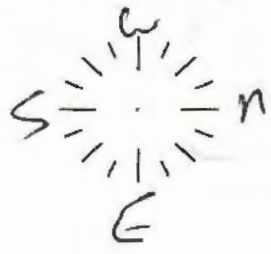
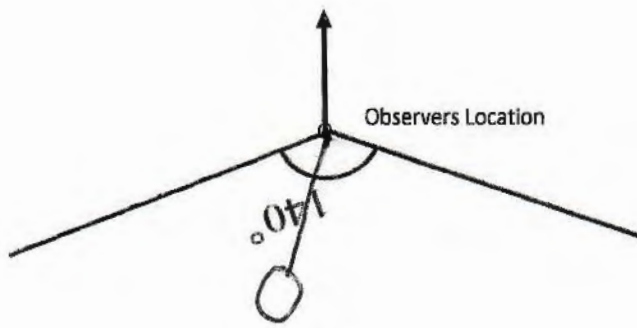
Date: 4/26/25

Observer: KLJ  
 Observation Start: 8:15  
 End: 8:20

Observation Point:	>>	0	15	30	45	Notes	>>	0	15	30	45	Notes
<u>~30' E of Stack</u>		0	0	0	0		30					
		1	0	0	0		31					
		2	0	0	0		32					
		3	0	0	0		33					
		4	0	0	0		34					
Distance from Source: <u>~30ft.</u>		5	0	0	0		35					
Source Height: <u>~16 ft.</u>		6					36					
Emission Color: <u>White Steam</u>		7					37					
Background: <u>Sky</u>		8					38					
Sky Condition: <u>Clear</u>		9					39					
		10					40					
Sun Position: <u>E</u>		11					41					
Temperature: <u>45</u> °F		12					42					
Wind Direction: <u>SE</u> at <u>1</u> mph		13					43					
Reading Conditions: <u>Good</u>		14					44					
		15					45					
		16					46					
Operating Conditions: <u>clear</u>		17					47					
		18					48					
		19					49					
		20					50					
Plume Description: <u>Cone</u>		21					51					
		22					52					
Attached or Detached		23					53					
Observer's Name: <u>Kyle Jones</u>		24					54					
Observer's Signature: <u>KLJ</u>	Date: <u>4/26/25</u>	25					55					
Organization: <u>Mostardi Hatt</u>		26					56					
		27					57					
		28					58					
		29					59					
Certified By: <u>Opagoe</u>	Date: <u>5/21/25</u>	Additional Comments:										

○ Emission Point

Compass Heading





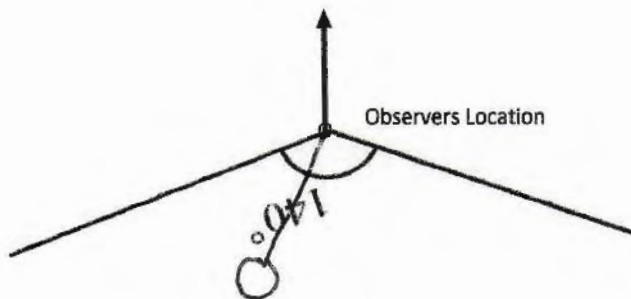
# Visible Emissions Observation Record Form

Facility Location: PCC Carson City  
W 251408  
System 1  
Run 5

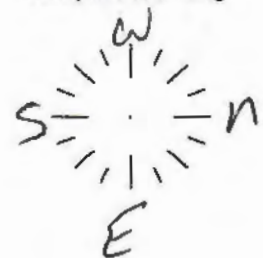
Date: 4/26/25  
 Observer: KLJ  
 Observation Start: 9:20  
 End: 9:25

Observation Point:	<<	0	15	30	45	Notes	>>	0	15	30	45	Notes
<u>n30E of Stack</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>30</u>				
		<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>31</u>				
		<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>32</u>				
		<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>33</u>				
Distance from Source: <u>n38 ft.</u>		<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>34</u>				
Source Height: <u>n16 ft.</u>		<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>35</u>				
Emission Color: <u>White Steam</u>		<u>6</u>						<u>36</u>				
Background: <u>sky</u>		<u>7</u>						<u>37</u>				
Sky Condition: <u>Clear</u>		<u>8</u>						<u>38</u>				
		<u>9</u>						<u>39</u>				
		<u>10</u>						<u>40</u>				
Sun Position: <u>ESE</u>		<u>11</u>						<u>41</u>				
Temperature: <u>54 °F</u>		<u>12</u>						<u>42</u>				
Wind Direction: <u>ESE at 4 mph</u>		<u>13</u>						<u>43</u>				
Reading Conditions: <u>Good</u>		<u>14</u>						<u>44</u>				
		<u>15</u>						<u>45</u>				
		<u>16</u>						<u>46</u>				
Operating Conditions: <u>Normal</u>		<u>17</u>						<u>47</u>				
		<u>18</u>						<u>48</u>				
		<u>19</u>						<u>49</u>				
Plume Description: <u>Cone</u>		<u>20</u>						<u>50</u>				
		<u>21</u>						<u>51</u>				
		<u>22</u>						<u>52</u>				
Attached or Detached		<u>23</u>						<u>53</u>				
Observer's Name: <u>Kyle Jones</u>		<u>24</u>						<u>54</u>				
Observer's Signature: <u>[Signature]</u>	Date: <u>4/26/25</u>	<u>25</u>						<u>55</u>				
		<u>26</u>						<u>56</u>				
		<u>27</u>						<u>57</u>				
Organization: <u>Mostardi, PAH</u>		<u>28</u>						<u>58</u>				
		<u>29</u>						<u>59</u>				
Certified By: <u>[Signature]</u>	Date: <u>3/21/25</u>	Additional Comments:										

○ Emission Point



Compass Heading





# Visible Emissions Observation Record Form

Facility Location:  
PCC Carson City  
M231408  
System 4  
Run 1

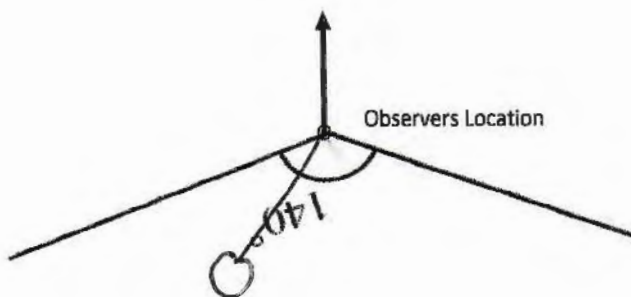
Date: 4/26/23

Observer: KW  
 Observation Start: 7:30 KW  
 End: 7:35 42L

Observation Point:	<<	0	15	30	45	Notes	>>	0	15	30	45	Notes
<u>w50 NE of Stack</u>												
Distance from Source: <u>w50</u> ft.	0	0	0	0	0		30					
Source Height: <u>w20</u> ft.	1	0	0	0	0		31					
Emission Color: <u>N/A</u>	2	0	0	0	0		32					
Background: <u>Sky</u>	3	0	0	0	0		33					
Sky Condition: <u>Clear</u>	4	0	0	0	0		34					
Sun Position: <u>ESE</u>	5	0	0	0	0		35					
Temperature: <u>40</u> °F	6						36					
Wind Direction: <u>SE</u> at <u>1</u> mph	7						37					
Reading Conditions: <u>Good</u>	8						38					
	9						39					
	10						40					
	11						41					
	12						42					
	13						43					
	14						44					
	15						45					
	16						46					
	17						47					
	18						48					
	19						49					
	20						50					
Operating Conditions: <u>Normal</u>	21						51					
	22						52					
	23						53					
Plume Description: <u>N/A</u>	24						54					
Attached or Detached	25						55					
Observer's Name: <u>Kyle Jones</u>	26						56					
Observer's Signature: <u>[Signature]</u> Date: <u>4/26/23</u>	27						57					
Organization: <u>Mostardi NatH</u>	28						58					
Certified By: <u>Opague</u> Date: <u>3/2/18</u>	29						59					

○ Emission Point

Compass Heading





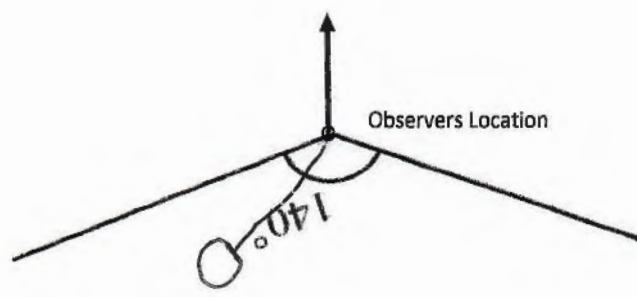
# Visible Emissions Observation Record Form

Facility Location: PCC Carson City  
M231408  
System 4  
Row 2

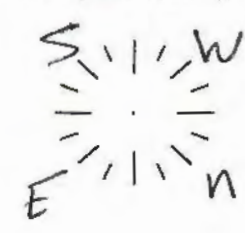
Date: 4/24/25  
 Observer: KLJ  
 Observation Start: 9:40  
 End: 9:45

Observation Point:	<	0	15	30	45	Notes	>	0	15	30	45	Notes
<u>W50 NE of Stack</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>6</u>										
		<u>7</u>										
		<u>8</u>										
		<u>9</u>										
		<u>10</u>										
		<u>11</u>										
		<u>12</u>										
		<u>13</u>										
		<u>14</u>										
		<u>15</u>										
		<u>16</u>										
		<u>17</u>										
		<u>18</u>										
		<u>19</u>										
		<u>20</u>										
		<u>21</u>										
		<u>22</u>										
		<u>23</u>										
		<u>24</u>										
		<u>25</u>										
		<u>26</u>										
		<u>27</u>										
		<u>28</u>										
		<u>29</u>										
Distance from Source: <u>W50</u> ft.												
Source Height: <u>W20</u> ft.												
Emission Color: <u>N/A</u>												
Background: <u>Sky</u>												
Sky Condition: <u>Clear</u>												
Sun Position: <u>ESE</u>												
Temperature: <u>54</u> °F												
Wind Direction: <u>ESE</u> at <u>4</u> mph												
Reading Conditions: <u>Good</u>												
Operating Conditions: <u>Normal</u>												
Plume Description: <u>N/A</u>												
Attached or Detached												
Observer's Name: <u>Kyle Jones</u>												
Observer's Signature: <u>[Signature]</u>												
Date: <u>4/24/25</u>												
Organization: <u>Mostardi Nat'l</u>												
Certified By: <u>[Signature]</u>												
Date: <u>4/24/25</u>												
Additional Comments:												

**O** Emission Point



Compass Heading





# Visible Emissions Observation Record Form

Facility Location: PCC Carson City  
M251408  
System 4  
Run 3

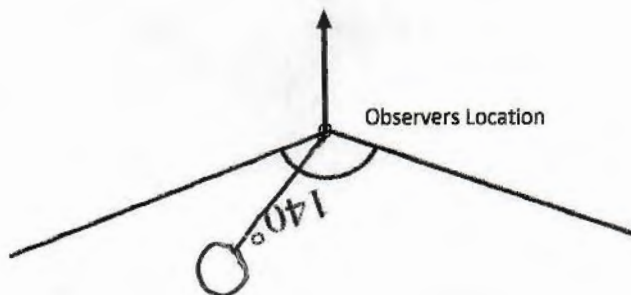
Date: 4/26/25

Observer: KLD  
 Observation Start: 11:20  
 End: 11:25

Observation Point:	<	0	15	30	45	Notes	>	0	15	30	45	Notes
<u>~50 NE of Stack</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>							
Distance from Source: <u>~50</u> ft.		<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>							
Source Height: <u>~20</u> ft.		<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>							
Emission Color: <u>N/A</u>		<u>6</u>										
Background: <u>Sky</u>		<u>7</u>										
Sky Condition: <u>Clear</u>		<u>8</u>										
		<u>9</u>										
		<u>10</u>										
Sun Position: <u>SE</u>		<u>11</u>										
Temperature: <u>62</u> °F		<u>12</u>										
Wind Direction: <u>ENE</u> at <u>1</u> mph		<u>13</u>										
Reading Conditions: <u>Good</u>		<u>14</u>										
		<u>15</u>										
		<u>16</u>										
Operating Conditions: <u>Normal</u>		<u>17</u>										
		<u>18</u>										
		<u>19</u>										
		<u>20</u>										
Plume Description: <u>N/A</u>		<u>21</u>										
		<u>22</u>										
Attached or Detached		<u>23</u>										
Observer's Name: <u>Kyle Jones</u>		<u>24</u>										
		<u>25</u>										
Observer's Signature: <u>[Signature]</u>	Date:	<u>26</u>										
	<u>4/26/25</u>	<u>27</u>										
Organization: <u>Mostardi North</u>		<u>28</u>										
		<u>29</u>										
Certified By: <u>[Signature]</u>	Date:	Additional Comments:										
	<u>4/21/25</u>											

○ Emission Point

Compass Heading





# Visible Emissions Observation Record Form

Facility Location:  
PCC Carson City  
M231408  
System 9  
Run 1

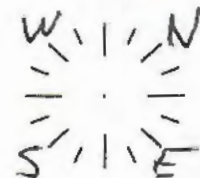
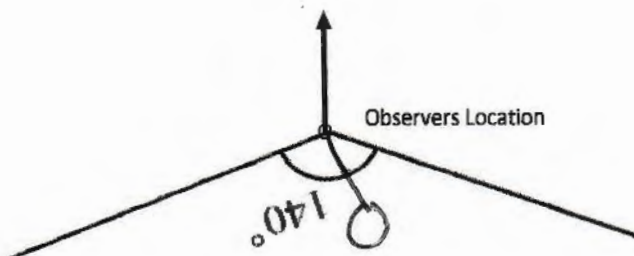
Date: 4/26/25

Observer: KLJ  
 Observation Start: 14:30  
 End: 15:35

Observation Point:	<<	0	15	30	45	Notes	>>	0	15	30	45	Notes
<u>~75 SE of Stack</u>												
	0	0	0	0	0			30				
	1	0	0	0	0			31				
	2	0	0	0	0			32				
	3	0	0	0	0			33				
	4	0	0	0	0			34				
Distance from Source: <u>~75</u> ft.	5	0	0	0	0			35				
Source Height: <u>~30</u> ft.	6							36				
Emission Color: <u>N/A</u>	7							37				
Background: <u>Sky</u>	8							38				
Sky Condition: <u>Clear</u>	9							39				
Sun Position: <u>ENE</u>	10							40				
Temperature: <u>46</u> °F	11							41				
Wind Direction: <u>SE</u> at <u>1</u> mph	12							42				
Reading Conditions: <u>Good</u>	13							43				
	14							44				
	15							45				
	16							46				
Operating Conditions: <u>Normal</u>	17							47				
	18							48				
	19							49				
	20							50				
Plume Description: <u>N/A</u>	21							51				
	22							52				
Attached or Detached	23							53				
Observer's Name: <u>Kyle Jones</u>	24							54				
Observer's Signature: <u>[Signature]</u>	25							55				
Date: <u>4/26/25</u>	26							56				
Organization: <u>Mostardi Flatt</u>	27							57				
	28							58				
	29							59				
Certified By: <u>[Signature]</u>	Additional Comments:											
Date: <u>3/21/23</u>												

○ Emission Point

Compass Heading









# Visible Emissions Observation Record Form

Facility Location:  
PCC Carson City  
M231408  
System 9  
Run 3

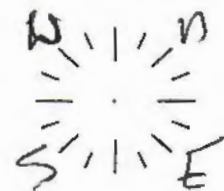
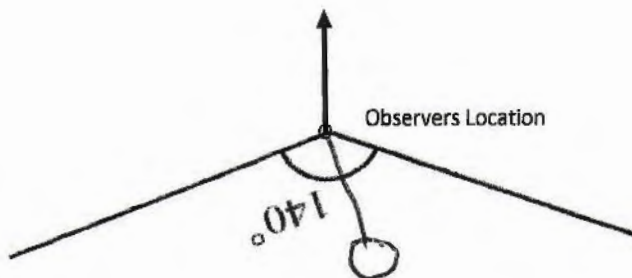
Date: 4/20/25

Observer: KLW  
 Observation Start: 11:00  
 End: 11:05

Observation Point:	><	0	15	30	45	Notes	><	0	15	30	45	Notes
<u>~ 75' SE of Stack</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>							
		<u>6</u>										
		<u>7</u>										
		<u>8</u>										
		<u>9</u>										
		<u>10</u>										
		<u>11</u>										
		<u>12</u>										
		<u>13</u>										
		<u>14</u>										
		<u>15</u>										
		<u>16</u>										
		<u>17</u>										
		<u>18</u>										
		<u>19</u>										
		<u>20</u>										
		<u>21</u>										
		<u>22</u>										
		<u>23</u>										
		<u>24</u>										
		<u>25</u>										
		<u>26</u>										
		<u>27</u>										
		<u>28</u>										
		<u>29</u>										
Distance from Source: <u>~ 75</u> ft.												
Source Height: <u>~ 80</u> ft.												
Emission Color: <u>N/A</u>												
Background: <u>sky</u>												
Sky Condition: <u>clear</u>												
Sun Position: <u>SE</u>												
Temperature: <u>62</u> °F												
Wind Direction: <u>ENE</u> at <u>1</u> mph												
Reading Conditions: <u>Good</u>												
Operating Conditions: <u>Normal</u>												
Plume Description:												
Attached or Detached												
Observer's Name: <u>Kyle Jones</u>												
Observer's Signature: <u>KJ</u>												
Date: <u>4/21/25</u>												
Organization: <u>Mustardi Matt</u>												
Certified By: <u>Opague</u>												
Date: <u>5/21/25</u>												
Additional Comments:												

○ Emission Point

Compass Heading





## Visible Emissions Observation Record Form

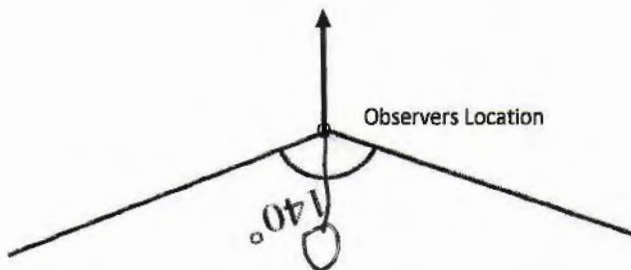
Facility Location:  
PCC Carson City  
NA 231408  
System 5  
RUN 1

Date: 4/27/23

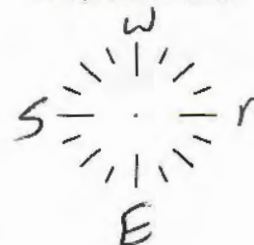
Observer: KLU  
 Observation Start: \_\_\_\_\_  
 End: \_\_\_\_\_

Observation Point:	<<	0	15	30	45	Notes	>>	0	15	30	45	Notes
<u>~60' East Stack</u>	0	0	0	0	0		30					
	1	0	0	0	0		31					
	2	0	0	0	0		32					
	3	0	0	0	0		33					
	4	0	0	0	0		34					
Distance from Source: <u>~60</u> ft.	5	0	0	0	0		35					
Source Height: <u>~30</u> ft.	6						36					
Emission Color: <u>NA</u>	7						37					
Background: <u>Sky</u>	8						38					
Sky Condition: <u>Clear</u>	9						39					
	10						40					
Sun Position: <u>E</u>	11						41					
Temperature: <u>45</u> °F	12						42					
Wind Direction: <u>S</u> at <u>1</u> mph	13						43					
Reading Conditions: <u>Good</u>	14						44					
	15						45					
	16						46					
Operating Conditions: <u>Normal</u>	17						47					
	18						48					
	19						49					
	20						50					
Plume Description: <u>N/A</u>	21						51					
	22						52					
Attached or Detached	23						53					
Observer's Name: <u>Kyle Jones</u>	24						54					
Observer's Signature: <u>[Signature]</u>	25						55					
Date: <u>4/27/23</u>	26						56					
	27						57					
Organization: <u>Mostardi Platt</u>	28						58					
	29						59					
Certified By: <u>[Signature]</u>	Additional Comments:											
Date: <u>5/2/23</u>												

○ Emission Point



Compass Heading





# Visible Emissions Observation Record Form

Facility Location: PCC Carson City  
M231408  
System 5  
Run 2

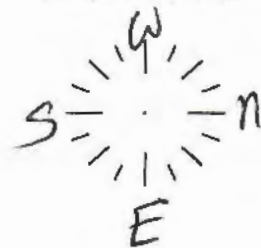
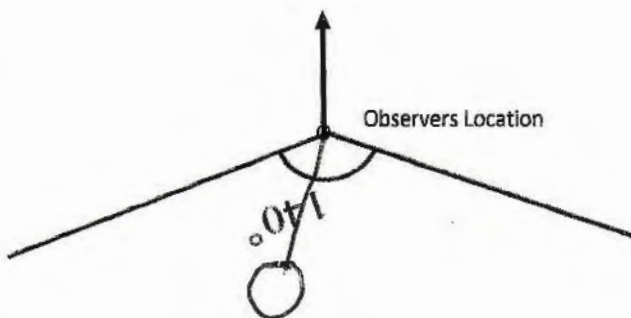
Date: 4/27/23

Observer: KJ  
 Observation Start: 9:25  
 End: 9:30

Observation Point:	>>	0	15	30	45	Notes	>>	0	15	30	45	Notes
<u>~60' E of stack</u>												
Distance from Source: <u>~60</u> ft.	4	0	0	0	0		34					
Source Height: <u>~50</u> ft.	5	0	0	0	0		35					
Emission Color: <u>N/A</u>	6						36					
Background: <u>sky</u>	7						37					
	8						38					
	9						39					
	10						40					
	11						41					
	12						42					
	13						43					
	14						44					
	15						45					
	16						46					
	17						47					
	18						48					
	19						49					
	20						50					
	21						51					
	22						52					
Operating Conditions: <u>Normal</u>	23						53					
	24						54					
	25						55					
Plume Description: <u>N/A</u>	26						56					
Attached or Detached	27						57					
Observer's Name: <u>Kyle Jones</u>	28						58					
Observer's Signature: <u>[Signature]</u>	29						59					
Date: <u>4/27/23</u>	Additional Comments:											
Organization: <u>Mostardi Matt</u>												
Certified By: <u>Crague</u>												
Date: <u>5/2/23</u>												

○ Emission Point

Compass Heading





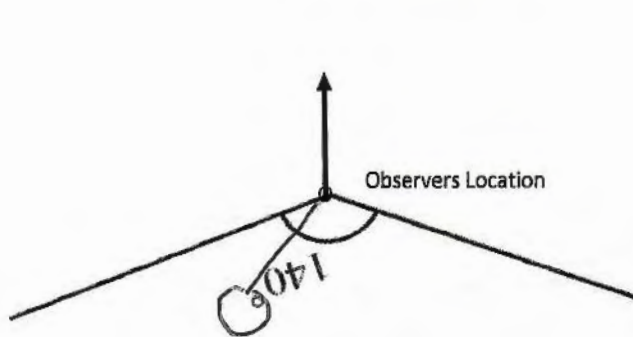
# Visible Emissions Observation Record Form

Facility Location: PCC Carson City  
M231408  
System 5  
Run 3

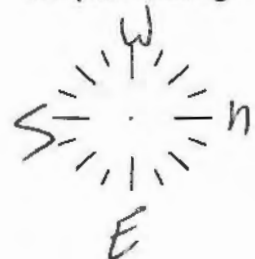
Date: 4/27/25  
 Observer: KLJ  
 Observation Start: 11:20  
 End: 11:25

Observation Point:	<	0	15	30	45	Notes	>	0	15	30	45	Notes
<u>~60' Eof Stack</u>	0	0	0	0	0		30					
	1	0	0	0	0		31					
	2	0	0	0	0		32					
	3	0	0	0	0		33					
	4	0	0	0	0		34					
Distance from Source: <u>~60</u> ft.	5	0	0	0	0		35					
Source Height: <u>~30</u> ft.	6						36					
Emission Color:	7						37					
Background: <u>sky</u>	8						38					
Sky Condition: <u>clear</u>	9						39					
	10						40					
Sun Position: <u>SE</u>	11						41					
Temperature: <u>70</u> °F	12						42					
Wind Direction: <u>ESE</u> at <u>4</u> mph	13						43					
Reading Conditions: <u>Good</u>	14						44					
	15						45					
	16						46					
Operating Conditions: <u>Normal</u>	17						47					
	18						48					
	19						49					
	20						50					
Plume Description: <u>N/A</u>	21						51					
	22						52					
Attached or Detached	23						53					
Observer's Name: <u>Kyle Jones</u>	24						54					
Observer's Signature: <u>[Signature]</u>	25						55					
Date: <u>4/27/25</u>	26						56					
Organization: <u>Mostardi Platt</u>	27						57					
	28						58					
	29						59					
Certified By: <u>Opague</u>	Additional Comments:											
Date: <u>5/21/25</u>												

○ Emission Point



Compass Heading





# Visible Emissions Observation Record Form

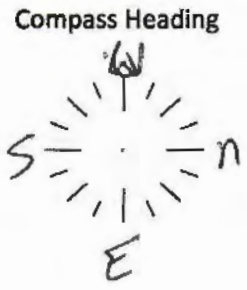
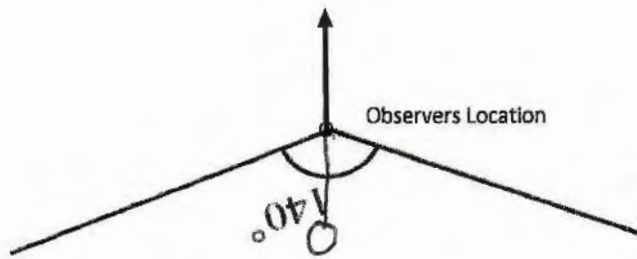
Facility Location:  
FCL Carson City  
M 231408  
System 7  
Run 1

Date: 4/27/23

Observer: WJ  
 Observation Start: 7:20  
 End: 7:25

Observation Point:	<<	0	15	30	45	Notes	>>	0	15	30	45	Notes
<u>n 70' E of Stack</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>30</u>				
		<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>31</u>				
		<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>32</u>				
		<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>33</u>				
Distance from Source: <u>n 70'</u> ft.		<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>34</u>				
Source Height: <u>n 25'</u> ft.		<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>35</u>				
Emission Color: <u>N/A</u>		<u>6</u>						<u>36</u>				
Background: <u>sky</u>		<u>7</u>						<u>37</u>				
		<u>8</u>						<u>38</u>				
Sky Condition: <u>Clear</u>		<u>9</u>						<u>39</u>				
		<u>10</u>						<u>40</u>				
Sun Position: <u>E</u>		<u>11</u>						<u>41</u>				
Temperature: <u>45</u> °F		<u>12</u>						<u>42</u>				
Wind Direction: <u>S</u> at <u>1</u> mph		<u>13</u>						<u>43</u>				
Reading Conditions: <u>Good</u>		<u>14</u>						<u>44</u>				
		<u>15</u>						<u>45</u>				
		<u>16</u>						<u>46</u>				
Operating Conditions: <u>Normal</u>		<u>17</u>						<u>47</u>				
		<u>18</u>						<u>48</u>				
		<u>19</u>						<u>49</u>				
		<u>20</u>						<u>50</u>				
Plume Description: <u>N/A</u>		<u>21</u>						<u>51</u>				
		<u>22</u>						<u>52</u>				
Attached or Detached		<u>23</u>						<u>53</u>				
Observer's Name: <u>Kyle Jones</u>		<u>24</u>						<u>54</u>				
Observer's Signature: <u>[Signature]</u>	Date: <u>4/27/23</u>	<u>25</u>						<u>55</u>				
		<u>26</u>						<u>56</u>				
		<u>27</u>						<u>57</u>				
Organization: <u>Mostardi Hatt</u>		<u>28</u>						<u>58</u>				
		<u>29</u>						<u>59</u>				
Certified By: <u>[Signature]</u>	Date: <u>3/21/23</u>	Additional Comments:										

○ Emission Point





# Visible Emissions Observation Record Form

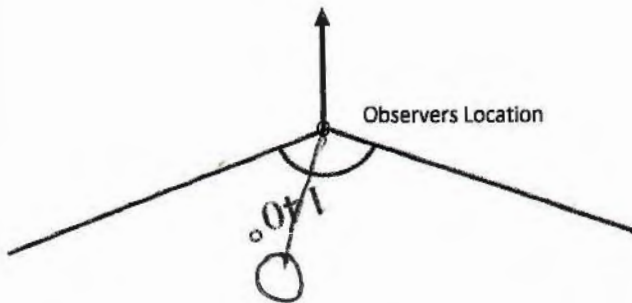
Facility Location: PCC Carson City  
M231408  
System 7  
Run 2

Date: 4/27/23  
 Observer: KLD  
 Observation Start: 9:25  
 End: 9:30

Observation Point:	><	0	15	30	45	Notes	><	0	15	30	45	Notes
<u>~70' E of Stack</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>		30					
		<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>		31					
		<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>		32					
		<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>		33					
		<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>		34					
		<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>		35					
Distance from Source: <u>~76</u> ft.		<u>6</u>					36					
Source Height: <u>~25</u> ft.		<u>7</u>					37					
Emission Color: <u>N/A</u>		<u>8</u>					38					
Background: <u>sky</u>		<u>9</u>					39					
Sky Condition: <u>Clear</u>		<u>10</u>					40					
Sun Position: <u>E</u>		<u>11</u>					41					
Temperature: <u>57</u> °F		<u>12</u>					42					
Wind Direction: <u>ESE</u> at <u>1</u> mph		<u>13</u>					43					
Reading Conditions: <u>Good</u>		<u>14</u>					44					
		<u>15</u>					45					
		<u>16</u>					46					
Operating Conditions: <u>Normal</u>		<u>17</u>					47					
		<u>18</u>					48					
		<u>19</u>					49					
		<u>20</u>					50					
Plume Description: <u>N/A</u>		<u>21</u>					51					
		<u>22</u>					52					
Attached or Detached		<u>23</u>					53					
Observer's Name: <u>Kyle Jones</u>		<u>24</u>					54					
		<u>25</u>					55					
Observer's Signature: <u>[Signature]</u>	Date: <u>4/27/23</u>	<u>26</u>					56					
		<u>27</u>					57					
Organization: <u>Mostardi Plant</u>		<u>28</u>					58					
		<u>29</u>					59					
Certified By: <u>[Signature]</u>	Date: <u>5/2/23</u>	Additional Comments:										

○ Emission Point

Compass Heading





# Visible Emissions Observation Record Form

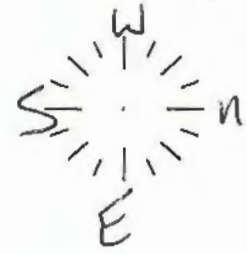
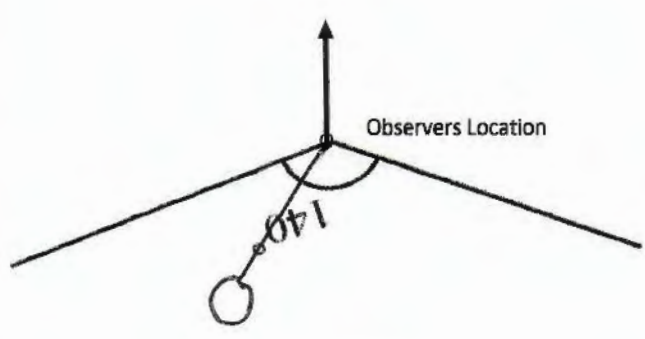
Facility Location: PCC Carson City  
M 231408  
System 7  
Runs

Date: 4/27/25  
 Observer: KLJ  
 Observation Start: 10:30  
 End: 10:55

Observation Point:	>	0	15	30	45	Notes	<	0	15	30	45	Notes
<u>n 70' E of Stack</u>		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>30</u>				
		<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>31</u>				
		<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>32</u>				
		<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>33</u>				
Distance from Source: <u>~70</u> ft.		<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>34</u>				
Source Height: <u>~25</u> ft.		<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>35</u>				
Emission Color: <u>N/A</u>		<u>6</u>						<u>36</u>				
Background: <u>sky</u>		<u>7</u>						<u>37</u>				
Sky Condition: <u>clear</u>		<u>8</u>						<u>38</u>				
Sun Position: <u>SE</u>		<u>9</u>						<u>39</u>				
Temperature: <u>65</u> °F		<u>10</u>						<u>40</u>				
Wind Direction: <u>ENE</u> at <u>1</u> mph		<u>11</u>						<u>41</u>				
Reading Conditions: <u>Good</u>		<u>12</u>						<u>42</u>				
		<u>13</u>						<u>43</u>				
		<u>14</u>						<u>44</u>				
		<u>15</u>						<u>45</u>				
Operating Conditions: <u>Normal</u>		<u>16</u>						<u>46</u>				
		<u>17</u>						<u>47</u>				
		<u>18</u>						<u>48</u>				
		<u>19</u>						<u>49</u>				
		<u>20</u>						<u>50</u>				
Plume Description: <u>N/A</u>		<u>21</u>						<u>51</u>				
		<u>22</u>						<u>52</u>				
Attached or Detached		<u>23</u>						<u>53</u>				
Observer's Name: <u>Kyle Jones</u>		<u>24</u>						<u>54</u>				
Observer's Signature: <u>[Signature]</u>	Date: <u>4/27/25</u>	<u>25</u>						<u>55</u>				
		<u>26</u>						<u>56</u>				
		<u>27</u>						<u>57</u>				
Organization: <u>Mostardi Hall</u>		<u>28</u>						<u>58</u>				
		<u>29</u>						<u>59</u>				
Certified By: <u>[Signature]</u>	Date: <u>5/21/25</u>	Additional Comments:										

**O** Emission Point

Compass Heading



VISIBLE EMISSIONS EVALUATOR

This is to certify that:

Ricardo Bocanegra-

Met the specifications of Federal Reference Method 9 (40 CFR part 60, Appendix A, Method 9) and qualified as a visible emissions evaluator.

Maximum deviation on white and black smoke did not exceed 7.5 opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Opaque Smoke School LLC of OPKS

<u>All Sources</u> Source Types	<u>03/31/2023</u> Certification Date	<u>14812</u> Certificate Number
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*William P. Stevenson*

\_\_\_\_\_  
President and Owner

VISIBLE EMISSIONS EVALUATOR

This is to certify that:

Kyle Jones-

Met the specifications of Federal Reference Method 9 (40 CFR part 60, Appendix A, Method 9) and qualified as a visible emissions evaluator.

Maximum deviation on white and black smoke did not exceed 7.5 opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Opaque Smoke School LLC of OPKS

<u>All Sources</u> Source Types	<u>03/31/2023</u> Certification Date	<u>14811</u> Certificate Number
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*William P. Stevenson*

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President and Owner



## Appendix H - Calibration Data

# **MOSTARDI PLATT**

## **Procedures for Method 5 and Flow Calibration**

### **Nozzles**

The nozzles are measured according to Method 5, Section 10.1

### **Dry Gas Meters**

The test meters are calibrated according to Method 5, Section 10.3 and 16.1. and “Procedures for Calibrating and Using Dry Gas Volume Meters as Calibration Standards” by P.R. Westlin and R.T. Shigehara, March 10, 1978.

### **Analytical Balance**

The accuracy of the analytical balance is checked with Class S, Stainless Steel Type 303 weights manufactured by F. Hopken and Son, Jersey City, New Jersey.

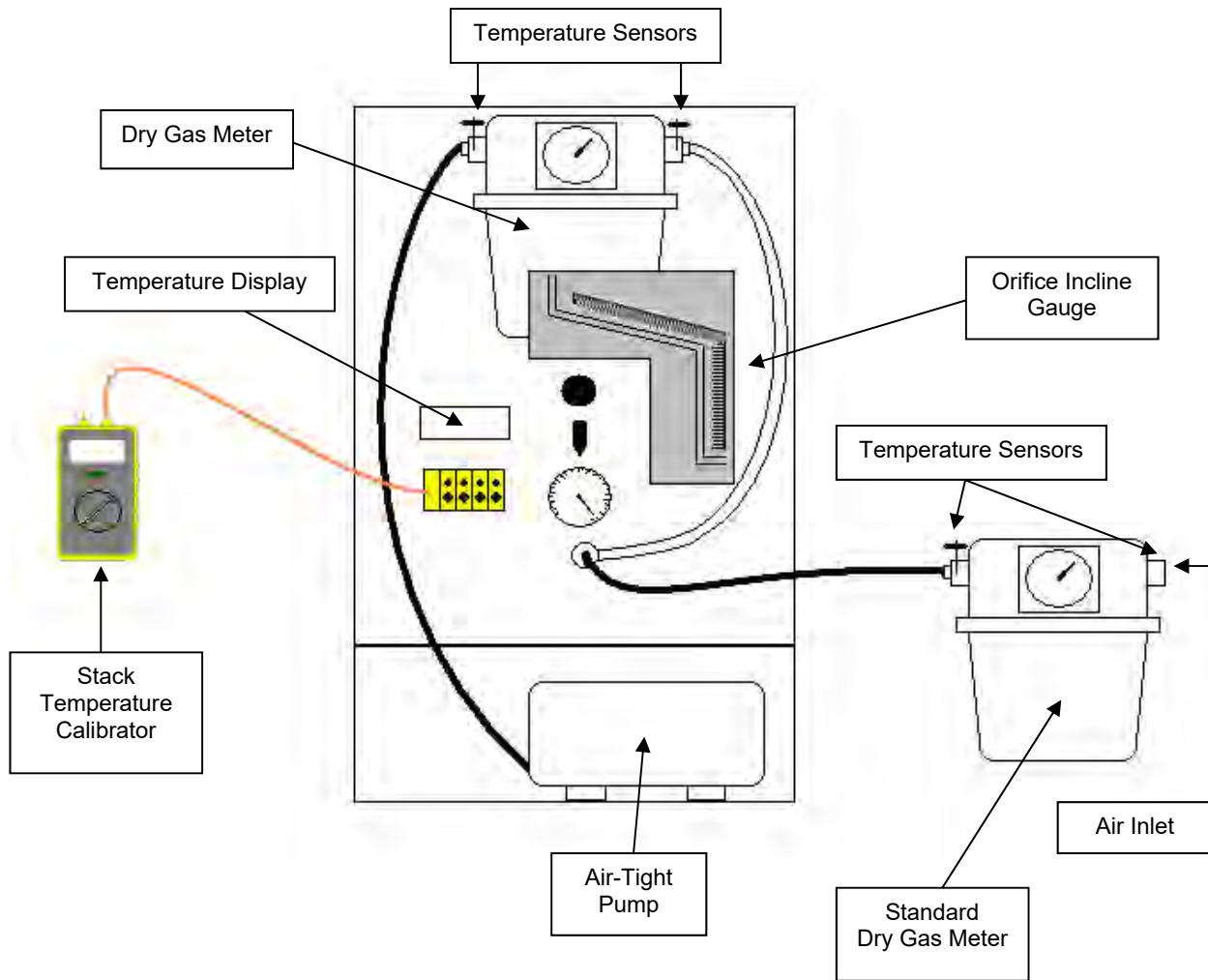
### **Temperature Sensing Devices**

The potentiometer and thermocouples are calibrated utilizing a NIST traceable millivolt source.

### **Pitot Tubes**

The pitot tubes utilized during this test program are manufactured according to the specification described and illustrated in the *Code of Federal Regulations*, Title 40, Part 60, Appendix A, Methods 1 and 2. The pitot tubes comply with the alignment specifications in Method 2, Section 10.1; and the pitot tube assemblies are in compliance with specifications in the same section.

# Dry Gas Meter/Control Module Calibration Diagram



Client: PCC Structurals  
 Facility: Carson Facility  
 Project #: M231408  
 Operating Condition: Normal

Test Location: System 1 - Autoclave  
 Date: 4/26/23  
 Operator: KLJ

Probe Length: 3.0 ft  
 Probe Type: Extractive  
 Sample Plane: Horizontal  
 Port Length: 4.00 in.  
 Port Size (diameter): 2 in.  
 Port Type: Other  
 Duct Shape: Circular  
 Diameter: 0.33 ft  
 Duct Area: 0.09 Sq. Ft.

Point Markings (including port length):  
 Point # 1 Inches 4.66  
 Point # 2 Inches 5.98  
 Point # 3 Inches 7.30

Upstream Diameters:  
 Downstream Diameters:  
 Number of Ports Sampled: 2  
 Number of Points per Port: 6  
 Total Number of Traverse Points: 12

Type	Setting	Cylinder ID	Cylinder Value	Analyzer Response	Difference, % of Span	Expiration Date	Final Bottle Pressure, PSI
O2 % (dry)	Zero	Zero Nitrogen	0	-0.09	0.41%	N/A	>500
	Mid	CC415470	11.06	11.09	-0.14%	47784	>500
	High	SG896172	22.07	22.01	0.27%	47185	>500
CO2 % (dry)	Zero	Zero Nitrogen	0	-0.01	0.05%	N/A	>500
	Mid	CC415470	11.17	11.28	-0.57%	47784	>500
	High	SG896172	19.21	19.15	0.31%	47185	>500

Type	Setting	Cylinder ID	Cylinder Value	Predicted Value	Predicted Value Difference, %	Analyzer Response	Difference, % of Cylinder	Expiration Date	Final Bottle Pressure, PSI
THC ppmv	Zero	Zero Nitrogne	0	N/A	N/A	-0.08	0.09%	N/A	>500
	Low	EB0014316	30.06	30.31	0.11%	30.28	-0.73%	10/3/2030	>500
	Mid	CC277550	60.54	61.13	0.71%	60.70	-0.26%	2/11/2030	>500
	High	ALM-044753	89.65	N/A	N/A	90.56	-1.02%	3/4/2030	>500

**Response Time Data**

Type	RM Analyzer Make/Model	RM Analyzer s/n	Analyzer Span	RM Gas Span
THC ppmv	Thermo 51i	12104510878	500	112
	Start		95% Response	Time (min)
Upscale				0.75
Downscale				0.75



Client: PCC Structurals  
 Facility: Carson Facility  
 Fuel Type: Coal, Bituminous  
 Fuel Factor: 9780  
 Diluent: O2 %

Location: System 1 - Autoclave  
 Date: 4/26/23  
 Operator: KLJ  
 Project #: M231408  
 Fuel Factor: by Standard

**O2 % (dry) Correction Data**

Run #	Cma	Precal	Postcal	Pre zero	Post zero	Co	Cm	C	Cgas	Span Bias	Span Drift	Zero Bias	Zero Drift
1	11.06	10.98	10.92	-0.20	-0.06	-0.13	10.95	20.61	20.7	0.77	-0.27	-0.14	0.63
2	11.06	10.92	10.81	-0.06	-0.07	-0.07	10.87	20.96	21.3	1.27	-0.50	-0.09	-0.05
3	11.06	10.81	10.80	-0.07	-0.01	-0.04	10.81	20.58	21.0	1.31	-0.05	-0.36	0.27

**CO2 % (dry) Correction Data**

Run #	Cma	Precal	Postcal	Pre zero	Post zero	Co	Cm	C	Cgas	Span Bias	Span Drift	Zero Bias	Zero Drift
1	11.17	10.97	10.99	-0.01	-0.01	-0.01	10.98	0.21	0.2	1.51	0.10	0.00	0.00
2	11.17	10.99	10.89	-0.01	-0.03	-0.02	10.94	0.03	0.1	2.03	-0.52	0.10	-0.10
3	11.17	10.89	10.88	-0.03	-0.01	-0.02	10.89	0.02	0.0	2.08	-0.05	0.00	0.10

**THC ppmv Calibration Data**

Run #	Cma	Precal	Postcal	Pre zero	Post zero	Co	Cm	C	Cgas	Span Bias	Span Drift	Zero Bias	Zero Drift
1	60.54	60.70	60.02	-0.08	0.21	0.07	60.36	7.70	7.7	0.86	-0.61	-0.19	0.26
2	60.54	60.02	59.51	0.21	-0.13	0.04	59.77	14.20	14.2	1.70	-0.46	0.12	-0.30
3	60.54	59.51	58.31	-0.13	1.74	0.81	58.91	13.20	13.2	3.68	-1.07	-1.55	1.67

**Calibration Corrected Data**

Run #	Run Date	Start Time	End Time	CO2 % (dry)	O2 % (dry)	THC ppmv
1	4/26/23	6:44	7:44	0.2	20.7	7.7
2	4/26/23	7:59	8:59	0.1	21.3	14.2
3	4/26/23	9:14	10:14	0.0	21.0	13.2

**Client:** PCC Structurals  
**Facility:** Carson Facility  
**Project #:** M231408  
**Test Location:** System 1 - Autoclave  
**Operating Condition:** Normal  
**Date:** 4/26/23

**Linearity Cal/Pre 1 Cal**

<u>Time</u>	<u>O2 % (dry)</u>		<u>CO2 % (dry)</u>		<u>THC ppmv</u>
5:18	20.81		0.06		
5:19	0.00		0.00		
5:20	20.47		0.05		
5:21	20.83		0.05		
5:22	-0.54		0.02		
5:23	-0.09	iz	-0.01	iz	
5:24	11.03		9.41		
5:25	22.71		20.37		
5:26	22.31		19.69		
5:27	21.53		18.78		
5:28	22.01	ih	19.15	ih	
5:29	22.48		17.91		
5:30	13.35		12.32		
5:31	11.09	im	11.28	im	
5:32	10.91		11.22		
5:52	6.67		0.01		0.15
5:53	0.09		-0.01		-0.08
5:54	0.06		-0.01		0.18
5:55	10.30		0.03		0.77
5:56	19.26		0.05		1.68
5:57	18.32		-0.01		90.56
5:58	18.59		0.00		90.56
5:59	17.47		0.00		84.79
6:00	0.06		0.00		14.35
6:01	-0.18		0.00		13.81
6:02	-0.19		-0.01		60.70
6:03	8.85		0.02		60.42
6:04	19.21		0.00		38.12
6:05	20.48		-0.01		30.42
6:06	20.47		0.01		30.28
6:07	20.50		-0.01		70.16
6:21	-0.20	z	-0.01	z	16.71
6:22	-0.21		-0.01		15.42
6:23	12.62		3.09		15.63
6:24	10.98	m	10.97	m	15.16

Client: PCC Structural  
 Facility: Carson Facility  
 Project #: M231408

Test Location: System 1 - Autoclave  
 Operating Condition: Normal  
 Date: 4/26/23

Post 1/Pre 2

Post 2/Pre 3

<u>Time</u>	<u>O2 % (dry)</u>	<u>CO2 % (dry)</u>	<u>THC ppmv</u>
7:46	5.62	0.55	2.38
7:47	-0.12	0.00	0.73
7:48	-0.06	z	0.21
7:49	10.55	6.67	0.12
7:50	10.92	m	0.08
7:51	15.99	4.91	27.08
7:52	20.87	0.02	53.46
7:53	20.89	-0.01	60.02

<u>Time</u>	<u>O2 % (dry)</u>	<u>CO2 % (dry)</u>	<u>THC ppmv</u>
9:01	-0.05	-0.02	4.10
9:02	-0.07	z	0.55
9:03	8.26	8.74	-0.13
9:04	10.81	m	-0.31
9:05	16.52	4.16	27.57
9:06	20.66	0.02	56.96
9:07	20.68	-0.01	59.51

Post 3

<u>Time</u>	<u>O2 % (dry)</u>	<u>CO2 % (dry)</u>	<u>THC ppmv</u>
10:16	8.91	0.04	2.67
10:17	-0.01	z	3.98
10:18	1.18	1.59	3.15
10:19	10.70	10.80	2.53
10:20	10.80	m	1.74
10:22	20.60	0.03	61.91
10:23	20.63	-0.01	58.31

Meter Box Calibration

Dry Gas Meter Calibration Data

Dry Gas Meter No. CM45  
 Standard Meter No. 16541852  
 Standard Meter (Y) 0.98870

Date: December 15, 2022  
 Calibrated By: KLJ  
 Barometric Pressure: 28.40

Run Number	Orifice Setting in H <sub>2</sub> O Chg (H)	Standard Meter Gas Volume vr	Dry Gas Meter Gas Volume vd	Standard Meter Temp. F° tr	Dry Gas Meter Inlet Temp. F° tdi	Dry Gas Meter Outlet Temp. F° tdo	Dry Gas Meter Avg. Temp. F° td	Time Min	Time Sec	Y	Chg (H)
Final		58.790	98.427	56	55	55					
Initial		53.748	93.401	55	54	54					
Difference	1   0.20	5.042	5.026	56	55	55	55	20	29	0.989	1.956
Final		65.702	105.325	57	53	53					
Initial		58.790	98.427	56	55	55					
Difference	2   0.50	6.912	6.898	57	54	54	54	17	16	0.985	1.858
Final		71.930	111.525	53	58	58					
Initial		65.702	105.325	57	53	53					
Difference	3   0.70	6.228	6.200	55	56	56	56	13	11	0.992	1.852
Final		79.161	118.731	54	58	58					
Initial		71.930	111.525	53	58	58					
Difference	4   0.90	7.231	7.206	54	58	58	58	13	25	0.999	1.810
Final		87.248	126.778	45	54	54					
Initial		79.161	118.731	54	58	58					
Difference	5   1.20	8.087	8.047	50	56	56	56	13	1	1.003	1.795
Final		53.748	93.401	55	53	53					
Initial		37.956	77.857	54	51	51					
Difference	6   2.00	15.792	15.544	55	52	52	52	20	4	0.994	1.916

Average 0.994 1.864



**Stack Temperature Sensor Calibration**

Meter Box # : CM45 Name : KLJ

Ambient Temperature : 80 °F Date : December 15, 2022

Calibrator Model # : CL940A

Serial # : 526

Date Of Certification : December 16, 2021

Primary Standards Directly Traceable National Institute of Standards and Technology (NIST)

<b>Reference Source Temperature (° F)</b>	<b>Test Thermometer Temperature (° F)</b>	<b>Temperature Difference %</b>
0	2	0.4
250	252	0.3
600	602	0.2
1200	1205	0.3

$$\frac{(\text{Ref. Temp., } ^\circ\text{F} + 460) - (\text{Test Therm. Temp., } ^\circ\text{F} + 460)}{\text{Ref. Temp., } ^\circ\text{F} + 460} * 100 \leq 1.5 \%$$

Ref. Temp., °F + 460

Meter Box Calibration

Dry Gas Meter Calibration Data

Dry Gas Meter No. CM45  
 Standard Meter No. 25125408  
 Standard Meter (Y) 1.00050

Date: May 11, 2023  
 Calibrated By: Rods  
 Barometric Pressure: 28.07

Run Number	Orifice Setting in H <sub>2</sub> O Chg (H)	Standard Meter Gas Volume vr	Dry Gas Meter Gas Volume vd	Standard Meter Temp. F° tr	Dry Gas Meter Inlet Temp. F° tdi	Dry Gas Meter Outlet Temp. F° tdo	Dry Gas Meter Avg. Temp. F° td	Time Min	Time Sec	Y	Chg (H)
Final		94.737	86.568	76	82	82					
Initial		80.261	71.899	75	80	80					
Difference	1   0.20	14.476	14.669	76	81	81	81	56	31	0.997	1.832
Final		80.261	71.899	75	80	80					
Initial		56.831	48.201	75	80	80					
Difference	2   0.50	23.430	23.698	75	80	80	80	58	42	0.997	1.886
Final		56.831	48.201	75	80	80					
Initial		50.346	41.651	74	79	79					
Difference	3   0.70	6.485	6.550	75	80	80	80	13	50	0.998	1.912
Final		50.346	41.651	74	80	80					
Initial		45.562	36.811	74	79	79					
Difference	4   0.90	4.784	4.840	74	80	80	80	9	0	0.997	1.909
Final		45.562	36.811	74	79	79					
Initial		39.626	30.833	74	79	79					
Difference	5   1.20	5.936	5.978	74	79	79	79	9	40	1.000	1.909
Final		39.626	30.833	74	79	79					
Initial		30.760	21.896	74	78	78					
Difference	6   2.00	8.866	8.937	74	79	79	79	11	5	0.996	1.876

Average 0.997 1.887

**Stack Temperature Sensor Calibration**

Meter Box # : CM45 Name : Rods

Ambient Temperature : 75.2 °F Date : May 11, 2023

Calibrator Model # : CL940A

Serial # : 526

Date Of Certification : December 29, 2022

Primary Standards Directly Traceable National Institute of Standards and Technology (NIST)

<b>Reference Source Temperature (° F)</b>	<b>Test Thermometer Temperature (° F)</b>	<b>Temperature Difference %</b>
0	1	0.2
250	251	0.1
600	601	0.1
1200	1205	0.3

$$\frac{(\text{Ref. Temp., } ^\circ\text{F} + 460) - (\text{Test Therm. Temp., } ^\circ\text{F} + 460)}{\text{Ref. Temp., } ^\circ\text{F} + 460} * 100 \leq 1.5 \%$$

Ref. Temp., °F + 460

Meter Box Calibration

Dry Gas Meter Calibration Data

Dry Gas Meter No. CM13  
 Standard Meter No. 16541652  
 Standard Meter (Y) 0.98870

Date: January 3, 2023  
 Calibrated By: TWM  
 Barometric Pressure: 28.12

Run Number	Orifice Setting in H <sub>2</sub> O Chg (H)	Standard Meter Gas Volume vr	Dry Gas Meter Gas Volume vd	Standard Meter Temp. F° tr	Dry Gas Meter Inlet Temp. F° tdi	Dry Gas Meter Outlet Temp. F° tdo	Dry Gas Meter Avg. Temp. F° td	Time Min	Time Sec	Y	Chg (H)
Final		98.113	62.955	54	63	57					
Initial		104.954	69.710	54	61	60					
Difference	1   0.20	-6.841	-6.755	54	62	59	60	23	31	1.013	1.391
Final		22.415	87.051	55	66	62					
Initial		29.508	94.131	56	66	63					
Difference	2   0.50	-7.093	-7.080	56	66	63	64	15	55	1.006	1.479
Final		17.117	81.759	55	65	62					
Initial		22.415	87.051	55	66	62					
Difference	3   0.70	-5.298	-5.292	55	66	62	64	10	17	1.005	1.547
Final		11.554	76.242	54	65	61					
Initial		17.117	81.759	55	65	62					
Difference	4   0.90	-5.563	-5.517	55	65	62	63	9	31	1.012	1.544
Final		5.110	69.850	54	61	60					
Initial		11.554	76.242	54	65	61					
Difference	5   1.20	-6.444	-6.392	54	63	61	62	9	35	1.009	1.557
Final		92.747	57.715	53	58	57					
Initial		98.113	62.955	54	63	57					
Difference	6   2.00	-5.366	-5.240	54	61	57	59	6	14	1.018	1.589

Average 1.010 1.518



<b>Stack Temperature Sensor Calibration</b>			
Temperature ID :	CM13	Name :	TWM
Ambient Temperature, °F :	51	Date :	January 3, 2023

<b>Temperature Calibrator</b>			
Model # :	CL940A	Certification Date:	January 3, 2023
Serial # :	526	Expiration Date:	January 3, 2024

Primary Standards Directly Traceable National Institute of Standards and Technology (NIST)

<b>Reference Source Temperature (°F)</b>	<b>Test Thermometer Temperature (°F)</b>	<b>Temperature Difference %</b>
0	0	0.0
250	252	0.3
600	602	0.2
1200	1205	0.3

$$\frac{(\text{Ref. Temp., } ^\circ\text{F} + 460) - (\text{Test Therm. Temp., } ^\circ\text{F} + 460)}{\text{Ref. Temp., } ^\circ\text{F} + 460} * 100 \leq 1.5 \%$$

Meter Box Calibration

Dry Gas Meter Calibration Data

Dry Gas Meter No. CM13  
 Standard Meter No. 16541852  
 Standard Meter (Y) 0.98870

Date: May 10, 2023  
 Calibrated By: RICHS  
 Barometric Pressure: 27.96

Run Number	Orifice Setting in H <sub>2</sub> O Chg (H)	Standard Meter Gas Volume vr	Dry Gas Meter Gas Volume vd	Standard Meter Temp. F° tr	Dry Gas Meter Inlet Temp. F° tdi	Dry Gas Meter Outlet Temp. F° tdo	Dry Gas Meter Avg. Temp. F° td	Time Min	Time Sec	Y	Chg (H)
Final		8.350	60.830	71	73	72					
Initial		0.001	52.453	70	73	71					
Difference	1   0.20	8.349	8.377	71	73	72	72	28	27	0.988	1.431
Final		18.772	71.276	71	76	73					
Initial		8.350	60.830	71	73	72					
Difference	2   0.50	10.422	10.446	71	75	73	74	23	8	0.990	1.517
Final		24.969	77.498	71	76	73					
Initial		18.772	71.276	71	76	73					
Difference	3   0.70	6.197	6.222	71	76	73	75	11	37	0.989	1.512
Final		31.760	84.325	71	78	74					
Initial		24.969	77.498	71	76	73					
Difference	4   0.90	6.791	6.827	71	77	74	75	11	38	0.989	1.622
Final		62.589	115.250	72	79	75					
Initial		31.760	84.325	71	78	74					
Difference	5   1.20	30.829	30.925	72	79	75	77	45	7	0.992	1.577
Final		99.966	52.415	70	73	71					
Initial		94.881	47.393	70	71	70					
Difference	6   2.00	5.085	5.022	70	72	71	71	5	45	0.998	1.576

Average 0.991 1.539

Meter Box Calibration

<b>Stack Temperature Sensor Calibration</b>			
Temperature ID :	CM13	Name :	RICHS
Ambient Temperature, °F :	70	Date :	5/10/2023

<b>Temperature Calibrator</b>			
Model # :	CL940A	Certification Date:	December 29, 2022
Serial # :	526	Expiration Date:	December 29, 2023

Primary Standards Directly Traceable National Institute of Standards and Technology (NIST)

<b>Reference Source Temperature (°F)</b>	<b>Test Thermometer Temperature (°F)</b>	<b>Temperature Difference %</b>
0	-1	0.2
250	248	0.3
600	597	0.3
1200	1199	0.1

$$\frac{(\text{Ref. Temp., } ^\circ\text{F} + 460) - (\text{Test Therm. Temp., } ^\circ\text{F} + 460)}{\text{Ref. Temp., } ^\circ\text{F} + 460} * 100 \leq 1.5 \%$$

Meter Box Calibration

Dry Gas Meter Calibration Data

Dry Gas Meter No. CM46  
 Standard Meter No. 25125408  
 Standard Meter (Y) 1.00050

Date: March 31, 2023  
 Calibrated By: RB  
 Barometric Pressure: 28.36

Run Number	Orifice Setting in H <sub>2</sub> O Chg (H)	Standard Meter Gas Volume vr	Dry Gas Meter Gas Volume vd	Standard Meter Temp. F° tr	Dry Gas Meter Inlet Temp. F° tdi	Dry Gas Meter Outlet Temp. F° tdo	Dry Gas Meter Avg. Temp. F° td	Time Min	Time Sec	Y	Chg (H)
Final		424.201	476.946	56	56	56					
Initial		429.247	482.080	56	57	57					
Difference	1   0.20	-5.046	-5.134	56	57	57	57	18	0	0.984	1.472
Final		429.247	482.080	56	57	57					
Initial		434.102	487.000	58	59	59					
Difference	2   0.50	-4.855	-4.920	57	58	58	58	12	0	0.988	1.769
Final		434.102	487.000	58	59	59					
Initial		438.841	491.820	58	60	60					
Difference	3   0.70	-4.739	-4.820	58	60	60	60	10	0	0.985	1.806
Final		438.841	491.820	58	60	60					
Initial		443.718	496.772	58	61	61					
Difference	4   0.90	-4.877	-4.952	58	61	61	61	9	0	0.988	1.773
Final		443.718	496.772	58	61	61					
Initial		448.536	501.671	58	62	62					
Difference	5   1.20	-4.818	-4.899	58	62	62	62	8	0	0.988	1.910
Final		419.535	472.225	56	55	55					
Initial		424.201	476.946	56	56	56					
Difference	6   2.00	-4.666	-4.721	56	56	56	56	6	0	0.983	1.917

Average 0.986 1.774



**Stack Temperature Sensor Calibration**

Meter Box # : CM46 Name : RB

Ambient Temperature : 55.8 °F Date : March 31, 2023

Calibrator Model # : CL940A

Serial # : 526

Date Of Certification : December 29, 2022

Primary Standards Directly Traceable National Institute of Standards and Technology (NIST)

<b>Reference Source Temperature (° F)</b>	<b>Test Thermometer Temperature (° F)</b>	<b>Temperature Difference %</b>
0	1	0.2
250	252	0.3
600	602	0.2
1200	1206	0.4

$$\frac{(\text{Ref. Temp., } ^\circ\text{F} + 460) - (\text{Test Therm. Temp., } ^\circ\text{F} + 460)}{\text{Ref. Temp., } ^\circ\text{F} + 460} * 100 \leq 1.5 \%$$

Ref. Temp., °F + 460

Meter Box Calibration

Dry Gas Meter Calibration Data

Dry Gas Meter No. CM46  
 Standard Meter No. 25125408  
 Standard Meter (Y) 1.00050

Date: March 31, 2023  
 Calibrated By: RB  
 Barometric Pressure: 28.36

Run Number	Orifice Setting in H <sub>2</sub> O Chg (H)	Standard Meter Gas Volume vr	Dry Gas Meter Gas Volume vd	Standard Meter Temp. F° tr	Dry Gas Meter Inlet Temp. F° tdi	Dry Gas Meter Outlet Temp. F° tdo	Dry Gas Meter Avg. Temp. F° td	Time Min	Time Sec	Y	Chg (H)
Final		424.201	476.946	56	56	56					
Initial		429.247	482.080	56	57	57					
Difference	1   0.20	-5.046	-5.134	56	57	57	57	18	0	0.984	1.472
Final		429.247	482.080	56	57	57					
Initial		434.102	487.000	58	59	59					
Difference	2   0.50	-4.855	-4.920	57	58	58	58	12	0	0.988	1.769
Final		434.102	487.000	58	59	59					
Initial		438.841	491.820	58	60	60					
Difference	3   0.70	-4.739	-4.820	58	60	60	60	10	0	0.985	1.806
Final		438.841	491.820	58	60	60					
Initial		443.718	496.772	58	61	61					
Difference	4   0.90	-4.877	-4.952	58	61	61	61	9	0	0.988	1.773
Final		443.718	496.772	58	61	61					
Initial		448.536	501.671	58	62	62					
Difference	5   1.20	-4.818	-4.899	58	62	62	62	8	0	0.988	1.910
Final		419.535	472.225	56	55	55					
Initial		424.201	476.946	56	56	56					
Difference	6   2.00	-4.666	-4.721	56	56	56	56	6	0	0.983	1.917

Average 0.986 1.774

**Stack Temperature Sensor Calibration**

Meter Box # : CM46 Name : RB

Ambient Temperature : 55.8 °F Date : March 31, 2023

Calibrator Model # : CL940A

Serial # : 526

Date Of Certification : December 29, 2022

Primary Standards Directly Traceable National Institute of Standards and Technology (NIST)

<b>Reference Source Temperature (° F)</b>	<b>Test Thermometer Temperature (° F)</b>	<b>Temperature Difference %</b>
0	1	0.2
250	252	0.3
600	602	0.2
1200	1206	0.4

$$\frac{(\text{Ref. Temp., } ^\circ\text{F} + 460) - (\text{Test Therm. Temp., } ^\circ\text{F} + 460)}{\text{Ref. Temp., } ^\circ\text{F} + 460} * 100 \leq 1.5 \%$$

Ref. Temp., °F + 460

Meter Box Calibration

Dry Gas Meter Calibration Data

Dry Gas Meter No. CM46  
 Standard Meter No. 25125408  
 Standard Meter (Y) 1.00050

Date: May 12, 2023  
 Calibrated By: RB  
 Barometric Pressure: 28.12

Run Number	Orifice Setting in H <sub>2</sub> O Chg (H)	Standard Meter Gas Volume vr	Dry Gas Meter Gas Volume vd	Standard Meter Temp. F° tr	Dry Gas Meter Inlet Temp. F° tdi	Dry Gas Meter Outlet Temp. F° tdo	Dry Gas Meter Avg. Temp. F° td	Time Min	Time Sec	Y	Chg (H)
Final		948.882	758.757	77	76	76					
Initial		944.261	754.110	76	73	73					
Difference	1   0.20	4.621	4.647	77	75	75	75	18	3	0.991	1.860
Final		953.842	763.745	76	78	78					
Initial		948.882	758.757	77	76	76					
Difference	2   0.50	4.960	4.988	77	77	77	77	12		0.995	1.775
Final		958.686	768.621	78	78	78					
Initial		953.842	763.745	76	78	78					
Difference	3   0.70	4.844	4.876	77	78	78	78	10		0.994	1.810
Final		963.636	773.617	78	79	79					
Initial		958.686	768.621	78	78	78					
Difference	4   0.90	4.950	4.996	78	79	79	79	9	4	0.990	1.837
Final		968.613	778.641	78	80	80					
Initial		963.636	773.617	78	79	79					
Difference	5   1.20	4.977	5.024	78	80	80	80	8	1	0.991	1.890
Final		944.261	754.110	76	73	73					
Initial		939.417	749.295	76	73	73					
Difference	6   2.00	4.844	4.815	76	73	73	73	6	2	0.996	1.893

Average                      **0.993**      **1.844**



**Stack Temperature Sensor Calibration**

Meter Box # : CM46 Name : RB

Ambient Temperature : 77.9 °F Date : May 12, 2023

Calibrator Model # : CL940A

Serial # : 526

Date Of Certification : December 29, 2022

Primary Standards Directly Traceable National Institute of Standards and Technology (NIST)

<b>Reference Source Temperature (° F)</b>	<b>Test Thermometer Temperature (° F)</b>	<b>Temperature Difference %</b>
0	0	0.0
250	251	0.1
600	601	0.1
1200	1205	0.3

$$\frac{(\text{Ref. Temp., } ^\circ\text{F} + 460) - (\text{Test Therm. Temp., } ^\circ\text{F} + 460)}{\text{Ref. Temp., } ^\circ\text{F} + 460} * 100 \leq 1.5 \%$$

Ref. Temp., °F + 460

## S TYPE PITOT TUBE INSPECTION WORKSHEET

Pitot Tube No: 4039

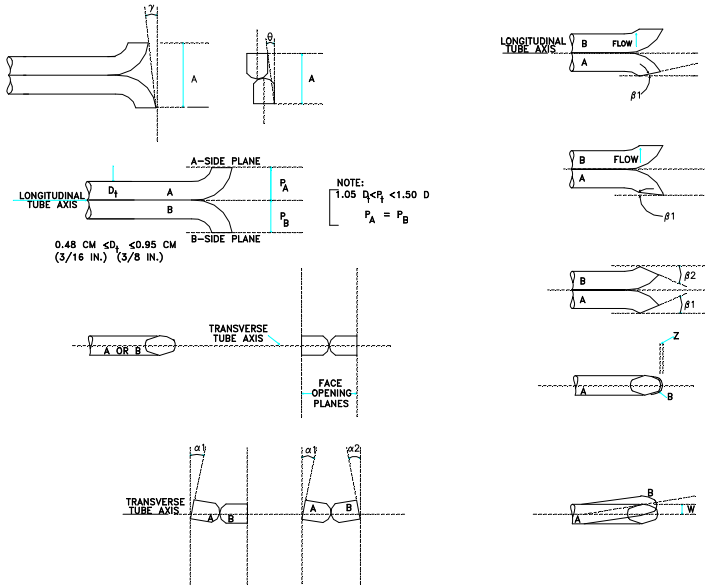
Date: 11/21/2022

Inspectors Name: TWM

Type of Probe: (circle one)

**M5**

Probe Length: 6 ft.



y

Pitot tube assembly level?  yes  no

Pitot tube openings damaged?  yes (explain below)  no

$a_1 = \underline{1}^\circ (\leq 10^\circ)$      $a_2 = \underline{2}^\circ (\leq 10^\circ)$      $z = A \sin \gamma = \underline{0.016}$  (in.); ( $\leq 0.125$  in.)

$b_1 = \underline{2}^\circ (\leq 5^\circ)$      $b_2 = \underline{1}^\circ (\leq 5^\circ)$      $w = A \sin \theta = \underline{0.01630}$  (in.); ( $\leq 0.03125$  in.)

$\gamma = \underline{1}^\circ$      $\theta = \underline{1}^\circ$      $A = \underline{0.934}$  (in.)     $P_A = \underline{0.467}$  (in.),  $P_B = \underline{0.467}$  (in.),  $D_1 = \underline{0.375}$  (in.)

Calibration required?  yes  no

## S TYPE PITOT TUBE INSPECTION WORKSHEET

Pitot Tube No: 4039

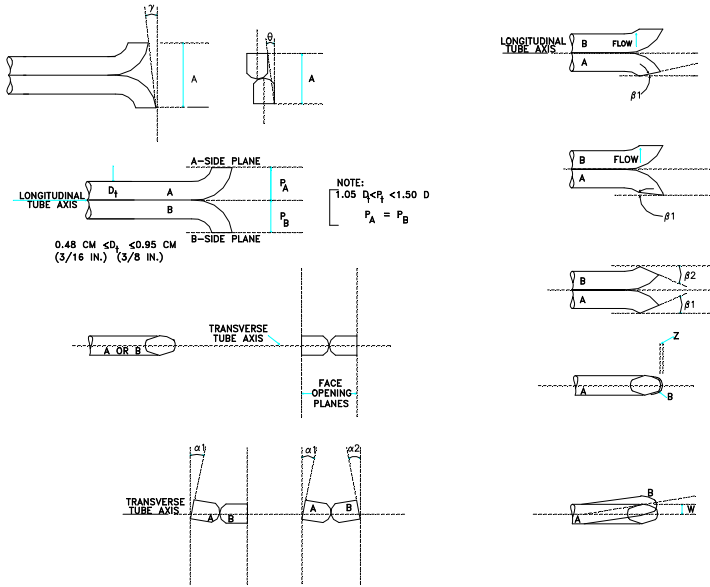
Date: 6/2/2023

Inspectors Name: RODS

Type of Probe: (circle one)

**M5**

Probe Length: 6 ft.



Pitot tube assembly level?  yes  no

Pitot tube openings damaged?  yes (explain below)  no

$a_1 = \underline{1}^\circ (\leq 10^\circ)$      $a_2 = \underline{2}^\circ (\leq 10^\circ)$      $z = A \sin \gamma = \underline{0.016}$  (in.); ( $\leq 0.125$  in.)

$b_1 = \underline{2}^\circ (\leq 5^\circ)$      $b_2 = \underline{1}^\circ (\leq 5^\circ)$      $w = A \sin \theta = \underline{0.01630}$  (in.); ( $\leq 0.03125$  in.)

$\gamma = \underline{1}^\circ$      $\theta = \underline{1}^\circ$      $A = \underline{0.934}$  (in.)     $P_A = \underline{0.467}$  (in.),  $P_B = \underline{0.467}$  (in.),  $D_1 = \underline{0.375}$  (in.)

Calibration required?  yes  no

## S TYPE PITOT TUBE INSPECTION WORKSHEET

Pitot Tube No: 3002

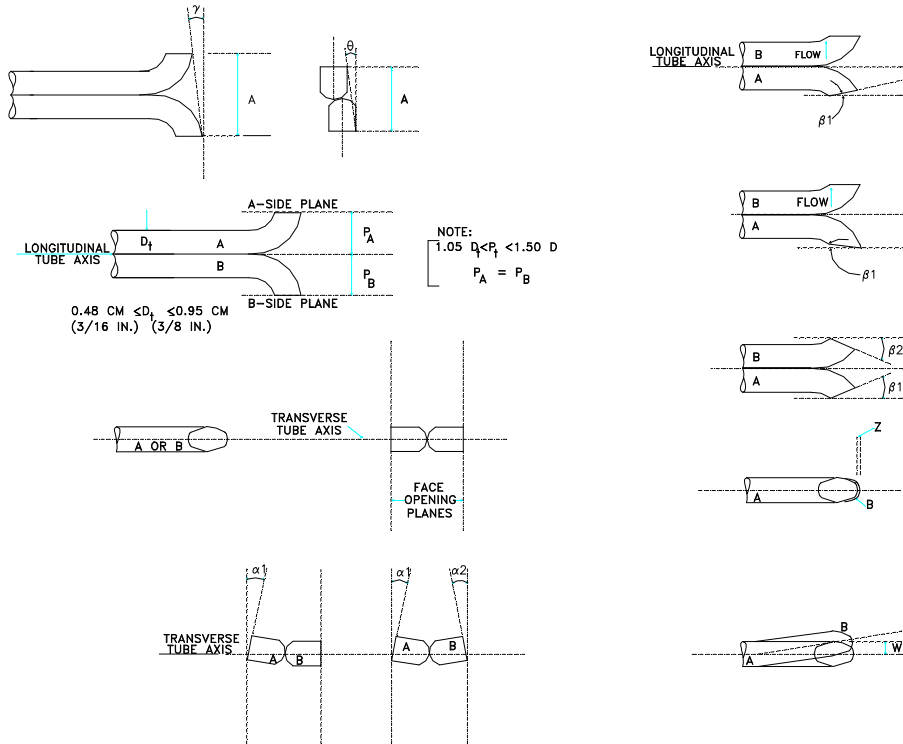
Date: 3/4/2022

Inspectors Name: RICHS

Type of Probe: (mark one)

M2	M5	M17
	x	

Probe Length: 3 ft.



Pitot tube assembly level?  yes  no

Pitot tube openings damaged?  yes (explain below)  no

$a_1 = \underline{1}^\circ (\leq 10^\circ)$       $a_2 = \underline{0.5}^\circ (\leq 10^\circ)$       $z = A \sin \gamma = \underline{0.000}$  (in.); ( $\leq 0.125$  in.)  
 $b_1 = \underline{0.5}^\circ (\leq 5^\circ)$       $b_2 = \underline{0}^\circ (\leq 5^\circ)$       $w = A \sin \theta = \underline{0.00000}$  (in.); ( $\leq 0.03125$  in.)  
 $\gamma = \underline{0}^\circ$       $\theta = \underline{0}^\circ$       $A = \underline{0.955}$  (in.)      $P_A = \underline{0.478}$  (in.),  $P_B = \underline{0.478}$  (in.),  $D_t = \underline{0.375}$  (in.)

Calibration required?  yes  no



## S TYPE PITOT TUBE INSPECTION WORKSHEET

Pitot Tube No: 3002

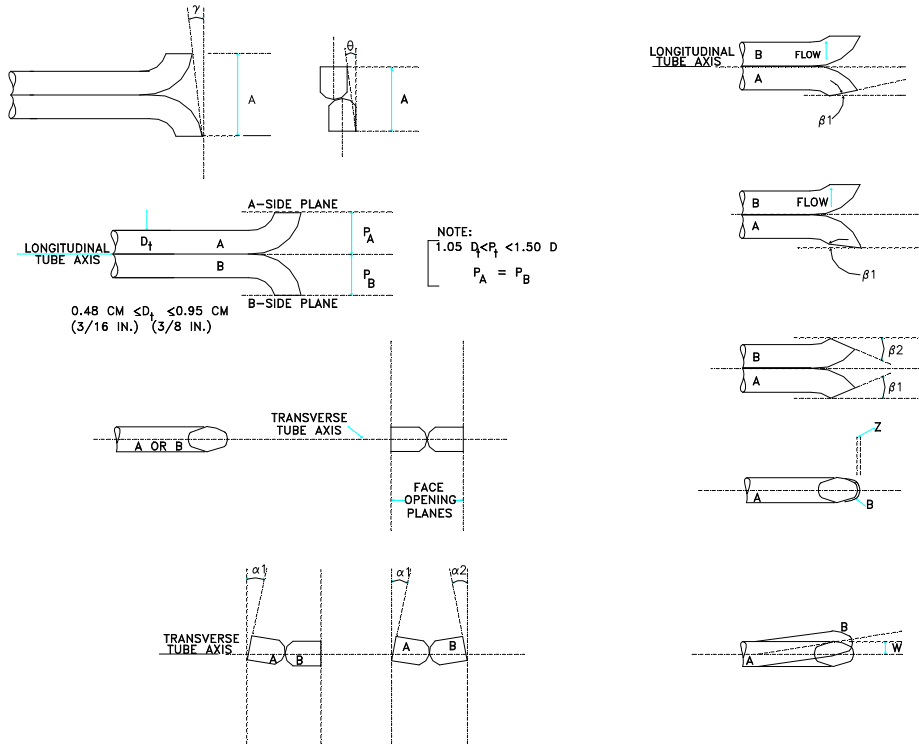
Date: 6/29/2022

Inspectors Name: TWM

Type of Probe: (mark one)

M2	M5	M17
	x	

Probe Length: 3 ft.



Pitot tube assembly level?   x   yes        no

Pitot tube openings damaged?        yes (explain below)   x   no

$a_1 = \underline{1}^\circ (\leq 10^\circ)$

$a_2 = \underline{0.5}^\circ (\leq 10^\circ)$

$z = A \sin \gamma = \underline{0.000}$  (in.); ( $\leq 0.125$  in.)

$b_1 = \underline{0.5}^\circ (\leq 5^\circ)$

$b_2 = \underline{0}^\circ (\leq 5^\circ)$

$w = A \sin \theta = \underline{0.00000}$  (in.); ( $\leq 0.03125$  in.)

$\gamma = \underline{0}^\circ$      $\theta = \underline{0}^\circ$      $A = \underline{0.956}$  (in.)

$P_A = \underline{0.478}$  (in.),  $P_B = \underline{0.478}$  (in.),  $D_t = \underline{0.375}$  (in.)

Calibration required?        yes   x   no

## S TYPE PITOT TUBE INSPECTION WORKSHEET

Pitot Tube No: 6969

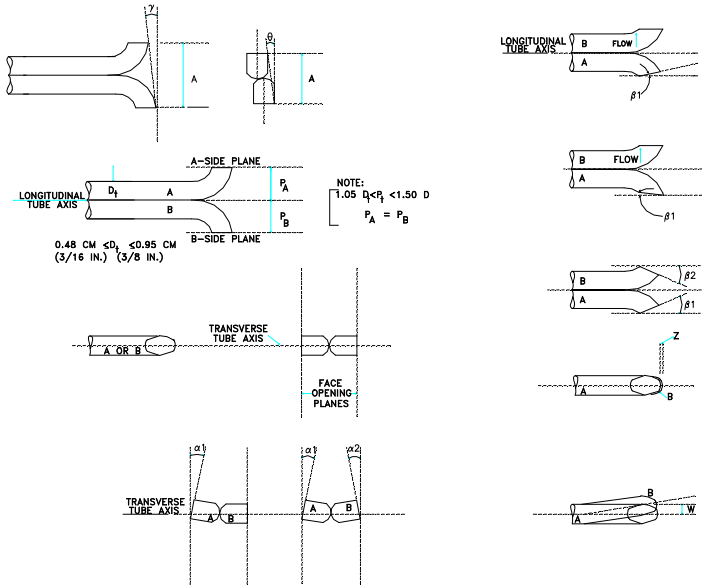
Date: 3/20/2023

Inspectors Name: TWM

Type of Probe: (circle one)

M2	M5	M17
	X	

Probe Length: 5 ft.



Y

Pitot tube assembly level?      yes      no

Pitot tube openings damaged?      yes (explain below)      no

$a_1 = \underline{2}^\circ (\leq 10^\circ)$       $a_2 = \underline{1.5}^\circ (\leq 10^\circ)$       $z = A \sin \gamma = \underline{0.017}$  (in.); ( $\leq 0.125$  in.)

$b_1 = \underline{1.5}^\circ (\leq 5^\circ)$       $b_2 = \underline{2}^\circ (\leq 5^\circ)$       $w = A \sin \theta = \underline{0.00000}$  (in.); ( $\leq 0.03125$  in.)

$\gamma = \underline{1}^\circ$       $\theta = \underline{0}^\circ$       $A = \underline{0.975}$  (in.)      $P_A = \underline{0.488}$  (in.),  $P_B = \underline{0.488}$  (in.),  $D_1 = \underline{0.375}$  (in.)

Calibration required?      yes   X   no

## S TYPE PITOT TUBE INSPECTION WORKSHEET

Pitot Tube No: 6969

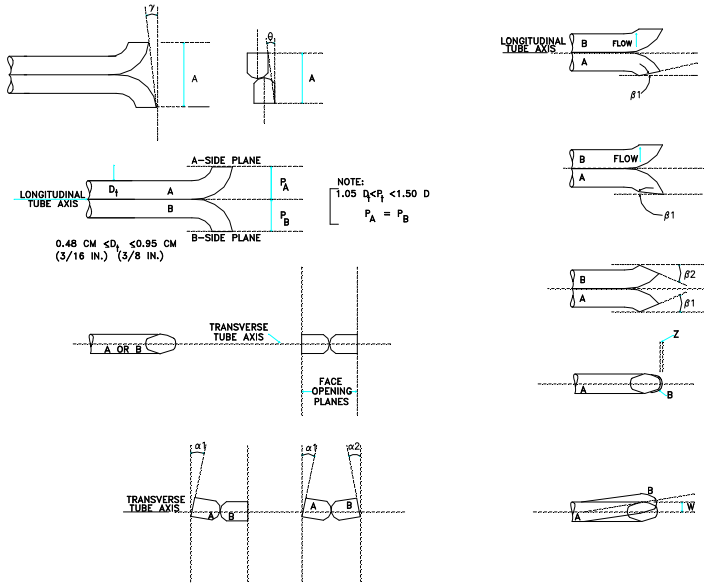
Date: 5/10/2023

Inspectors Name: RODS

Type of Probe: (circle one)

M2	M5	M17
	<b>X</b>	

Probe Length: 5 ft.



Pitot tube assembly level?  yes  no

Pitot tube openings damaged?  yes (explain below)  no

$a_1 = \underline{2}^\circ (\leq 10^\circ)$      $a_2 = \underline{1.5}^\circ (\leq 10^\circ)$      $z = A \sin \gamma = \underline{0.034}$  (in.); ( $\leq 0.125$  in.)

$b_1 = \underline{1.5}^\circ (\leq 5^\circ)$      $b_2 = \underline{2}^\circ (\leq 5^\circ)$      $w = A \sin \theta = \underline{0.01702}$  (in.); ( $\leq 0.03125$  in.)

$\gamma = \underline{2}^\circ$      $\theta = \underline{1}^\circ$      $A = \underline{0.975}$  (in.)     $P_A = \underline{0.488}$  (in.),  $P_B = \underline{0.488}$  (in.),  $D_t = \underline{0.375}$  (in.)

Calibration required?  yes  no

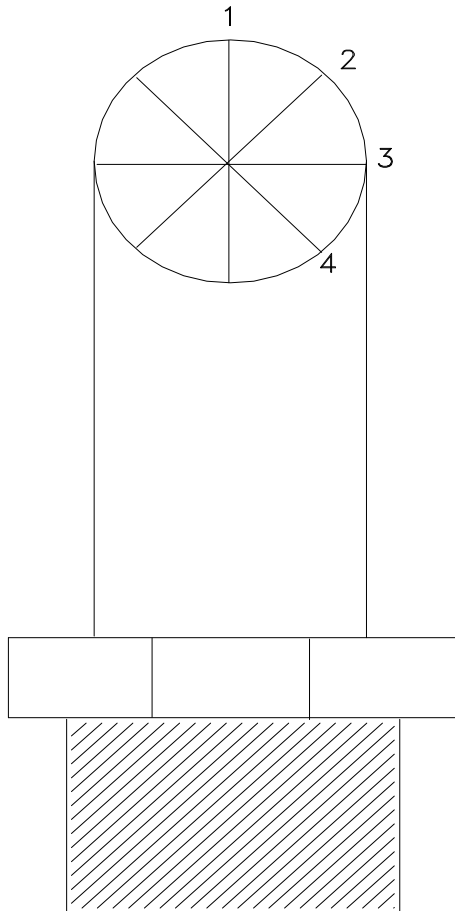
# Nozzle Calibration

Date: 10/26/2021

Nozzle ID No.: 992

Analyst: KLJ

Material/Type: Quartz



0.495 1

0.495 2

0.495 3

0.494 4

<b>Average</b>
<u><b>0.495</b></u>

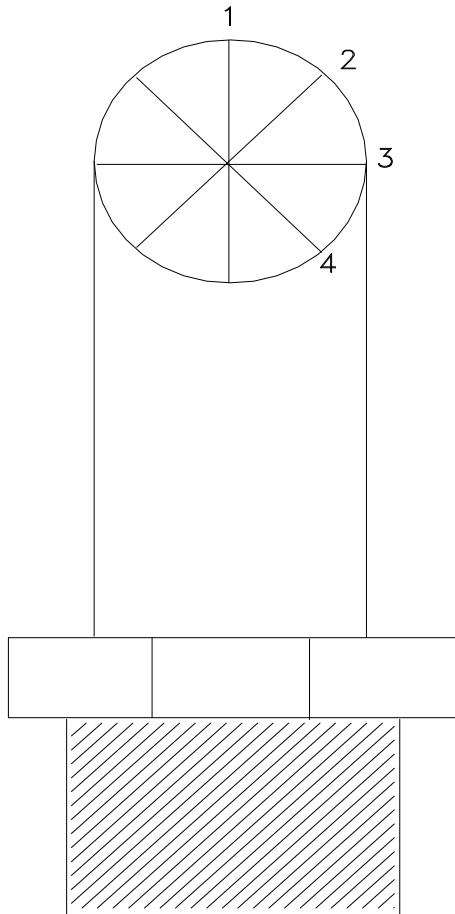
# Nozzle Calibration

Date: 3/9/2021

Nozzle ID No.: 122

Analyst: RGO

Material/Type: Quartz



0.166 1

0.166 2

0.166 3

0.166 4



<b>Average</b>
<u><b>0.166</b></u>



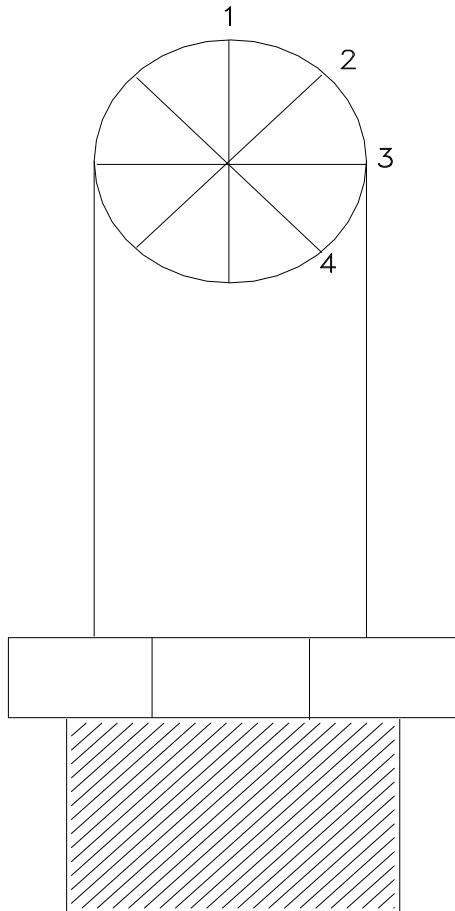
# Nozzle Calibration

Date: 1/27/2020

Nozzle ID No.: 299

Analyst: DPP

Material/Type: Quartz



0.260 1

0.262 2

0.263 3

0.263 4

**Valid Data**

**Average**

**0.262**

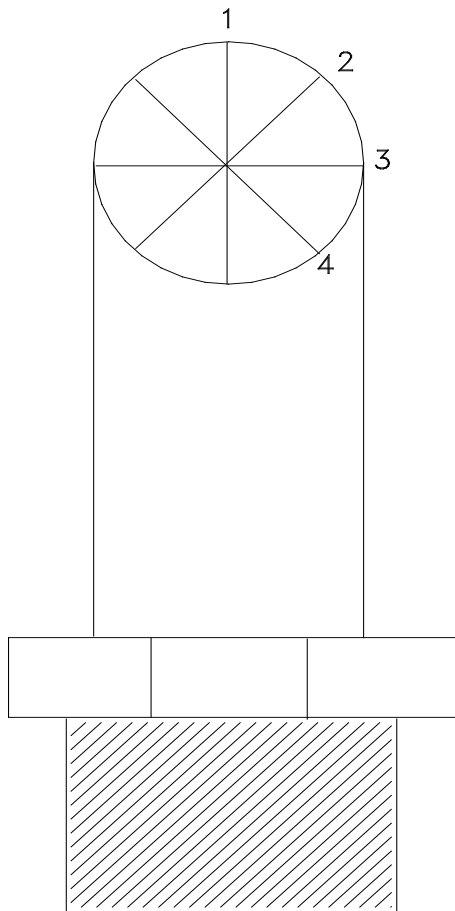
# Nozzle Calibration

Date: 1/24/2020

Nozzle ID No.: 868

Analyst: DPP

Material/Type: Quartz



0.356 1

0.355 2

0.357 3

0.358 4

**Valid Data**

**Average**

0.357

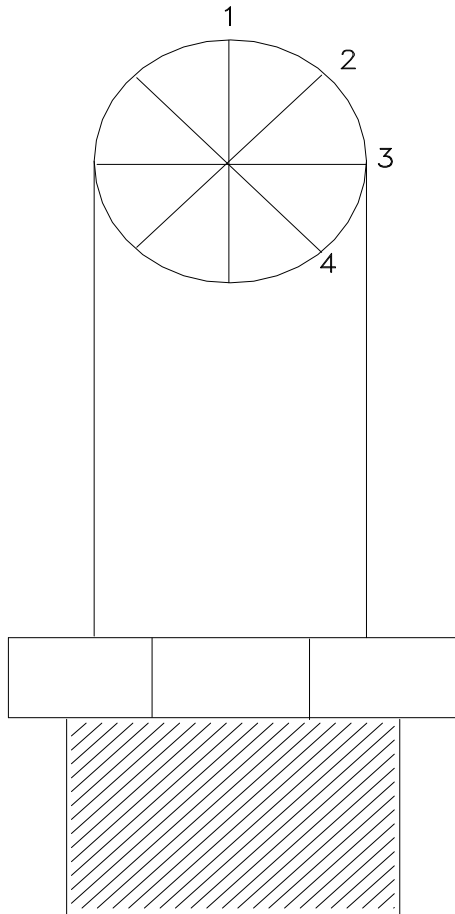
# Nozzle Calibration

Date: 3/9/2021

Nozzle ID No.: 108

Analyst: RGO

Material/Type: Quartz



0.345 1

0.344 2

0.345 3

0.345 4

**Valid Data**

<b>Average</b>
<b>0.345</b>

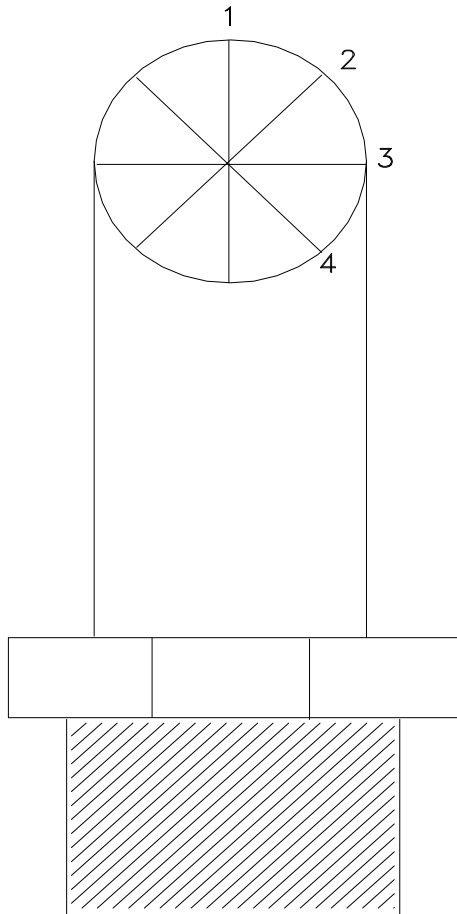
# Nozzle Calibration

Date: 3/9/2021

Nozzle ID No.: 106

Analyst: RGO

Material/Type: Quartz



0.486 1

0.486 2

0.486 3

0.487 4

**Valid Data**

**Average**

**0.486**

## Appendix I - Gas Cylinder Certifications



# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA PROTOCOL STANDARD

Part Number: E03NI78E15A0225	Reference Number: 48-402574718-1
Cylinder Number: CC415470	Cylinder Volume: 152.0 CF
Laboratory: 124 - Los Angeles (SAP) - CA	Cylinder Pressure: 2015 PSIG
PGVP Number: B32022	Valve Outlet: 590
Gas Code: CO2,O2,BALN	Certification Date: Oct 28, 2022

**Expiration Date: Oct 28, 2030**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	11.00 %	11.17 %	G1	+/- 0.6% NIST Traceable	10/28/2022
OXYGEN	11.00 %	11.06 %	G1	+/- 0.7% NIST Traceable	10/28/2022
NITROGEN	Balance				

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060432	CC413737	7.489 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 14, 2025
NTRM	98051002	SG9150866BAL	12.05 % OXYGEN/NITROGEN	+/- 0.7%	Dec 14, 2023

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS 6E CO2	NDIR	Oct 17, 2022
SIEMENS OXYMAT 6	PARAMAGNETIC	Oct 13, 2022

Triad Data Available Upon Request



Signature on file



# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA PROTOCOL STANDARD

Part Number: E02AI99E15A0705	Reference Number: 48-402677770-1
Cylinder Number: EB0014316	Cylinder Volume: 146.0 CF
Laboratory: 124 - Los Angeles (SAP) - CA	Cylinder Pressure: 2015 PSIG
PGVP Number: B32023	Valve Outlet: 590
Gas Code: PPN,BALA	Certification Date: Feb 28, 2023

**Expiration Date: Feb 28, 2031**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	30.00 PPM	30.06 PPM	G1	+/- 0.6% NIST Traceable	02/28/2023
AIR	Balance				

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	16061117	EB0081910	50.06 PPM PROPANE/AIR	+/- 0.5%	Mar 22, 2028

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 AUP2010243 C3H8	FTIR	Feb 17, 2023

Triad Data Available Upon Request



\_\_\_\_\_  
Signature on file

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA PROTOCOL STANDARD

Part Number: E02AI99E15A1877	Reference Number: 48-402677771-1
Cylinder Number: CC277550	Cylinder Volume: 146.0 CF
Laboratory: 124 - Los Angeles (SAP) - CA	Cylinder Pressure: 2015 PSIG
PGVP Number: B32023	Valve Outlet: 590
Gas Code: PPN,BALA	Certification Date: Feb 28, 2023

**Expiration Date: Feb 28, 2031**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	60.00 PPM	60.54 PPM	G1	+/- 0.6% NIST Traceable	02/28/2023
AIR	Balance				

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	16061117	EB0081910	50.06 PPM PROPANE/AIR	+/- 0.5%	Mar 22, 2028

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 AUP2010243 C3H8	FTIR	Feb 17, 2023

Triad Data Available Upon Request



\_\_\_\_\_  
Signature on file

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15A0565	Reference Number:	48-402058891-1
Cylinder Number:	ALM-044753	Cylinder Volume:	146.2 CF
Laboratory:	124 - Los Angeles (SAP) - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32021	Valve Outlet:	590
Gas Code:	PPN,BALA	Certification Date:	Mar 22, 2021

**Expiration Date: Mar 22, 2029**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE AIR	90.00 PPM Balance	89.65 PPM	G1	+/- 0.5% NIST Traceable	03/22/2021

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	16060312	CC471390	99.70 PPM PROPANE/AIR	+/- 0.5%	Nov 16, 2021

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR C3H8 018335821	FTIR	Mar 09, 2021

Triad Data Available Upon Request



\_\_\_\_\_  
Signature on file



## Appendix J - NO<sub>2</sub> to NO Converter Efficiency Test

## NO2 to NO Converter Test

**Client:** PCC Structurals  
**Facility:** Carson City Facility  
**Test Location:** System 2 - Mold Burnout  
**Date:** 4/24/2023  
**Project #:** M231408

**Conv. Temp:** 621.6 °C  
**Test Type** NO2 Direct  
**Max:** 45.5 ppm

**Conversion:** 90.37 %  
**Requirement:** 90.00 %

### Pre-Calibration

Time	NO <sub>x</sub>	Cal Flag
15:15	-0.01	z
15:16	0.00	
15:17	24.26	
15:18	44.12	h
15:19	11.13	
15:20	30.15	
15:21	20.01	
15:22	18.00	
15:23	18.04	m

### Test

Time	NO <sub>x</sub>
15:26	42.6
15:27	44.3
15:28	44.1
15:29	44.0
15:30	44.2
15:31	44.5
15:32	44.9
15:33	45.5 <b>Max</b>
15:34	45.0

### Post-Calibration

Time	NO <sub>x</sub>	Cal Flag
15:56	0.6	
15:57	0.4	z
15:58	16.3	
15:59	18.0	m
16:00	18.0	

### PRE-CAL RESULT

**zero** -0.02%  
**mid** -0.07%  
**high** -0.11%

### POST-CAL RESULT

**zero** 0.91%  
**mid** -0.16%

Type	RM Analyzer Make/Model	RM Analyzer s/n	Analyzer Span	RM Gas Span	Expiration Date	
	Thermo 42i	1173100023	100	44.17		
Type	Setting	Cylinder ID	Cylinder Value	Analyzer Response	Difference, % of Span	Expiration Date
	Zero	Zero Nitrogen	0	-0.01	0.02%	N/A
	Mid	CC438563	18.07	18.04	0.07%	5/25/2024
	High	CC733600	44.17	44.12	0.11%	12/14/2023
NO2 ppmvd	CEG	CC510742	50.35			3/17/2024

## Appendix K – Pictures and Correspondence



















SJIII 3219

SKYJACK

SKYJACK





002100  
D18 Budget  
Spill/Leak  
REVERTABLE









SKYJACK

SJII 3219



















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UNIVERSAL  
UNICOGGLASS.COM

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**Appendix L – NDEP Permit**



**June 22, 2022**

Ryan Walker  
General Manager  
PCC Structural, Inc.  
2727 Lockheed Way  
Carson City, NV 89706

**RE: Notification of Issuance of Revision and Renewal of Class II Air Quality Operating Permit AP3324-1253.03, FIN A0528, Air Cases 9519 and 9520 – Carson City Facility**

Dear Mr. Walker:

The Nevada Division of Environmental Protection – Bureau of Air Pollution Control (BAPC) has reviewed the applications submitted by PCC Structural, Inc. on December 26, 2017 for the above-referenced operating permit under legal authority from Nevada Revised Statutes (NRS) 445B.100 through 445B.640, inclusive, and pursuant to regulations in Nevada Administrative Code (NAC) 445B.001 through 445B.3689, inclusive. Based upon technical review and recommendation, I hereby issue the operating permit with appropriate restrictions. Enclosed is your copy of the operating permit which must be posted conspicuously at the facility.

In accordance with NRS 445B.340 and NAC 445B.890, you may appeal the Department's issuance of the operating permit within 10 days after you receive the operating permit. Appeals may be filed with the State Environmental Commission located at 901 S. Stewart Street, Carson City, Nevada 89701. For questions regarding appeals, call (775) 687-9374.

Please review the operating permit carefully and ensure you understand all conditions, restrictions, monitoring, recordkeeping, and other requirements. If you have any questions, contact Andrew Bell at (775) 687-9356 or [abell@ndep.nv.gov](mailto:abell@ndep.nv.gov).

Sincerely,

Ashley Taylor, P.E.  
Supervisor, Permitting Branch  
Bureau of Air Pollution Control

AT/ab  
Enclosure: Class II Air Quality Operating Permit AP3324-1253.03  
Certified Mail No. 9171 9690 0935 0255 2632 02  
E-Copy: [ryan.walker@pccstructurals.com](mailto:ryan.walker@pccstructurals.com), PCC Structural, Inc.



**Bureau of Air Pollution Control**

901 SOUTH STEWART STREET SUITE 4001

CARSON CITY, NEVADA 89701-5249

p: 775-687-9349 • [ndep.nv.gov/air](http://ndep.nv.gov/air)

**Facility ID No. A0528**

**Permit No. AP3324-1253.03**

**CLASS II AIR QUALITY OPERATING PERMIT**

**Issued to:** PCC STRUCTURALS, INC. (HEREINAFTER REFERRED TO AS PERMITTEE)

**Mailing Address:** 2727 LOCKHEED WAY, CARSON CITY, NV 89706

**Physical Address:** 2727 LOCKHEED WAY, CARSON CITY, NV 89706

**Driving Directions:** FROM I-580 NORTH IN CARSON CITY, TAKE THE ARROWHEAD DRIVE EXIT 42 AND TRAVEL EAST ON ARROWHEAD DRIVE 1.7 MILES. TURN RIGHT ON RYAN WAY THEN LEFT ON LOCKHEED WAY. THE FACILITY IS 0.24 MILES ON THE RIGHT.

**General Facility Location:** SECTION 4, T 15N, R 20E, MDB&M  
HA 104 - EAGLE VALLEY / CARSON CITY COUNTY  
NORTH 4,342,385 M, EAST 263,529 M, UTM ZONE 11, NAD 83

**Emission Unit List:**

**A. System 1 - Steam Heated Autoclave**

S2.001 Melco Steel Autoclave

**B. System 2 - Mold Burnout Furnaces**

S2.002 Self-Fabricated Furnace "F" (S004/007) - 1.68 MMBtu

S2.003 Pacific Kiln Mold Burnout Furnace 1 - 4.2 MMBtu

S2.004 Pacific Kiln Mold Burnout Furnace 2 - 4.2 MMBtu

S2.005 Pacific Kiln Mold Burnout Furnace (S004/093) - 1.69 MMBtu

**C. System 3 - Air Furnaces (Electric)**

S2.006 InductoTherm Furnace 1

S2.007 InductoTherm Furnace 2

S2.008 InductoTherm Furnace 3

S2.009 InductoTherm Furnace 4

S2.035 CLA Air Furnace

S2.036 Lift Coil Air Furnace

S2.010 Vacuum Furnace

**D. System 4 - Part Removal**

S2.011 Tabor 24" Abrasive Chop-saw (S006/016)

S2.012 Tabor 16" Abrasive Chop-saw (S006/020)

S2.014 Blade Stop

S2.017 Self-Fabricated Knockout Station

S2.018 Thermadyne Plasma Arc (S006/031)





Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Emission Unit List: (continued)

**E. System 5 - Sand Blast Cleaning Equipment**

S2.020 Clemco Blast Cabinet (S007/006)  
S2.021 Clemco Blast Cabinet (S007/027)  
S2.022 Clemco Blast Cabinet (S007/028)  
S2.023 Goff Tumble Blast (S007/002)  
S2.024 Goff Tumble Blast (S004/053)  
S2.025 Pangbom Tumble Blast (S007/002)  
S2.026 Clemco Blast Cabinet (S007/014)  
S2.027 10" Abrasive Chop-saw (S006/011)  
S2.033 Jet Arc Booth (S006/008)  
S2.037 Clemco Blast Cabinet - 100 Grit (2-28)  
S2.044 Jet Arc Booth

**F. System 6 - Hangar Blast Cleaning**

S2.028 Goff Hangar Blast (S007/022)

**G. System 7 - Gate Removal Equipment**

S2.029 Single Head Grinder 1  
S2.030 Single Head Grinder 2  
S2.031 Porter Cable 8" Platen Grinder (S009/002)  
S2.038 Dual Belt Grinder  
S2.039 Bader Grinder 1  
S2.040 Bader Grinder 2  
S2.041 CC Built 2" Belt Grinder  
S2.042 Dual Belt Grinder

**H. System 8 - Reserved**

**I. System 9 - Ingot Cutoff Saw**

S2.034 Ingot Cutoff Saw  
S2.043 8" Porter Cable Grinder

\*\*\*\*End of Emission Unit List\*\*\*\*



Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section I. General Provisions**

A. Prohibited acts; penalty; establishment of violation; request for prosecution (NRS 445B.470) (*State Only Requirement*)

1. A person shall not knowingly:
  - a. Violate any applicable provision, the terms or conditions of any permit or any provision for the filing of information;
  - b. Fail to pay any fee;
  - c. Falsify any material statement, representation or certification in any notice or report; or
  - d. Render inaccurate any monitoring device or method, required pursuant to the provisions of NRS 445B.100 to 445B.450, inclusive, or 445B.470 to 445B.640, inclusive, or any regulation adopted pursuant to those provisions.
2. Any person who violates any provision of subsection 1 shall be punished by a fine of not more than \$10,000 for each day of the violation.
3. The burden of proof and degree of knowledge required to establish a violation of subsection 1 are the same as those required by 42 U.S.C. § 7413(c), as that section existed on October 1, 1993.
4. If, in the judgment of the Director of the Department or the Director's designee, any person is engaged in any act or practice which constitutes a criminal offense pursuant to NRS 445B.100 to 445B.640, inclusive, the Director of the Department or the designee may request that the Attorney General or the district attorney of the county in which the criminal offense is alleged to have occurred institute by indictment or information a criminal prosecution of the person.
5. If, in the judgment of the control officer of a local air pollution control board, any person is engaged in such an act or practice, the control officer may request that the district attorney of the county in which the criminal offense is alleged to have occurred institute by indictment or information a criminal prosecution of the person.

B. Visible emissions: Maximum opacity; determination and monitoring of opacity (NAC 445B.22017) (*Federally Enforceable SIP Requirement*)

1. Except as otherwise provided in this section and NAC 445B.2202, no owner or operator may cause or permit the discharge into the atmosphere from any emission unit which is of an opacity equal to or greater than 20 percent. Opacity must be determined by one of the following methods:
  - a. If opacity is determined by a visual measurement, it must be determined as set forth in Reference Method 9 in Appendix A of 40 CFR Part 60.
  - b. If a source uses a continuous monitoring system for the measurement of opacity, the data must be reduced to 6-minute averages as set forth in 40 CFR 60.13(h).
2. The provisions of this section and NAC 445B.2202 do not apply to that part of the opacity that consists of uncombined water. The burden of proof to establish the application of this exemption is upon the person seeking to come within the exemption.
3. If the provisions of 40 CFR Part 60, Subpart D or Da apply to an emission unit, the emission unit must be allowed one 6-minute period per hour of not more than 27 percent opacity as set forth in 40 CFR 60.42(a)(2) and 40 CFR 60.42a(b).
4. The continuous monitoring system for monitoring opacity at a facility must be operated and maintained by the owner or operator specified in the permit for the facility in accordance with NAC 445B.256 to 445B.267, inclusive.

C. Visible emissions: Exceptions for stationary sources (NAC 445B.2202) (*Federally Enforceable SIP Requirement*)

The provisions of NAC 445B.22017 do not apply to:

1. Smoke from the open burning described in NAC 445B.22067;
2. Smoke discharged in the course of training air pollution control inspectors to observe visible emissions, if the facility has written approval of the Commission;
3. Emissions from an incinerator as set forth in NAC 445B.2207; or
4. Emissions of stationary diesel-powered engines during warm-up for not longer than 15 minutes to achieve operating temperatures.



Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section I. General Provisions (continued)**

D. Odors (NAC 445B.22087) (State Only Requirement)

1. No person may discharge or cause to be discharged, from any stationary source, any material or regulated air pollutant which is or tends to be offensive to the senses, injurious or detrimental to health and safety, or which in any way interferes with or prevents the comfortable enjoyment of life or property.
2. The Director shall investigate an odor when 30 percent or more of a sample of the people exposed to it believe it to be objectionable in usual places of occupancy. The sample must be at least 20 people or 75 percent of those exposed if fewer than 20 people are exposed.
3. The Director shall deem the odor to be a violation if he or she is able to make two odor measurements within a period of 1 hour. These measurements must be separated by at least 15 minutes. An odor measurement consists of a detectable odor after the odorous air has been diluted with eight or more volumes of odor-free air.

E. Prohibited Conduct: Concealment of Emissions (NAC 445B.225) (Federally Enforceable SIP Requirement)

No person may install, construct or use any device which conceals any emission without reducing the total release of regulated air pollutants to the atmosphere.

F. Prohibited conduct: Operation of source without required equipment; removal or modification of required equipment; modification of required procedure (NAC 445B.227) (Federally Enforceable SIP Requirement)

Except as otherwise provided in NAC 445B.001 to 445B.3497, inclusive, [NAC adopted as of October 2016 includes NAC 445B.001 to 445B.390, inclusive], no person may:

1. Operate a stationary source of air pollution unless the control equipment for air pollution which is required by applicable requirements or conditions of this Operating Permit is installed and operating.
2. Disconnect, alter, modify or remove any of the control equipment for air pollution or modify any procedure required by an applicable requirement or condition of the permit.

G. Excess Emissions (NAC 445B.232) (State Only Requirement)

1. Scheduled maintenance or testing or scheduled repairs which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.3689, inclusive, must be approved in advance by the Director and performed during a time designated by the Director as being favorable for atmospheric ventilation.
2. Each owner or operator shall notify the Director of the proposed time and expected duration at least 30 days before any scheduled maintenance or testing which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.390, inclusive. The scheduled maintenance or testing must not be conducted unless the scheduled maintenance or testing is approved pursuant to subsection 1.
3. Each owner or operator shall notify the Director of the proposed time and expected duration at least 24 hours before any scheduled repairs which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.390, inclusive. The scheduled repairs must not be conducted unless the scheduled repairs are approved pursuant to subsection 1.
4. Each owner or operator shall notify the Director of any excess emissions within 24 hours after any malfunction or upset of the process equipment or equipment for controlling pollution or during start-up or shutdown of that equipment.





Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Section I. General Provisions (continued)

G. Excess Emissions (NAC 445B.232) (*State Only Requirement*) (continued)

5. Each owner or operator shall provide the Director, within 15 days after any malfunction, upset, start-up, shutdown or human error which results in excess emissions, sufficient information to enable the Director to determine the seriousness of the excess emissions. The information must include at least the following:
  - a. The identity of the stack or other point of emission, or both, where the excess emissions occurred.
  - b. The estimated magnitude of the excess emissions expressed in opacity or in the units of the applicable limitation on emission and the operating data and methods used in estimating the magnitude of the excess emissions.
  - c. The time and duration of the excess emissions.
  - d. The identity of the equipment causing the excess emissions.
  - e. If the excess emissions were the result of a malfunction, the steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of the malfunction.
  - f. The steps taken to limit the excess emissions.
  - g. Documentation that the equipment for controlling air pollution, process equipment or processes were at all times maintained and operated, to a maximum extent practicable, in a manner consistent with good practice for minimizing emissions.
6. Each owner or operator shall ensure that any notification or related information submitted to the Director pursuant to this section is provided in a format specified by the Director.

H. Testing and Sampling (NAC 445B.252) (*Federally Enforceable SIP Requirement*)

1. To determine compliance with NAC 445B.001 to 445B.3497, inclusive, [NAC adopted as of October 2016 includes NAC 445B.001 to 445B.390, inclusive], before the approval or the continuance of an operating permit or similar class of permits, the Director may either conduct or order the owner of any stationary source to conduct or have conducted such testing and sampling as the Director determines necessary. Testing and sampling or either of them must be conducted and the results submitted to the Director within 60 days after achieving the maximum rate of production at which the affected facility will be operated, but not later than 180 days after initial start-up of the facility and at such other times as may be required by the Director.
2. Tests of performance must be conducted and data reduced in accordance with the methods and procedures of the test contained in each applicable subsection of this section unless the Director:
  - a. Specifies or approves, in specific cases, the use of a method of reference with minor changes in methodology;
  - b. Approves the use of an equivalent method;
  - c. Approves the use of an alternative method, the results of which the Director has determined to be adequate for indicating whether a specific stationary source is in compliance; or
  - d. Waives the requirement for tests of performance because the owner or operator of a stationary source has demonstrated by other means to the director's satisfaction that the affected facility is in compliance with the standard.
3. Tests of performance must be conducted under such conditions as the Director specifies to the operator of the plant based on representative performance of the affected facility. The owner or operator shall make available to the Director such records as may be necessary to determine the conditions of the performance test. Operations during periods of startup, shutdown and malfunction must not constitute representative conditions of a performance test unless otherwise specified in the applicable standard.
4. The owner or operator of an affected facility shall give notice to the Director 30 days before the test of performance to allow the Director to have an observer present. A written testing procedure for the test of performance must be submitted to the Director at least 30 days before the test of performance to allow the Director to review the proposed testing procedures.
5. Each test of performance must consist of at least three separate runs using the applicable method for that test. Each run must be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the runs apply. In the event of forced shutdown, failure of an irreplaceable portion of the sampling train, extreme meteorological conditions or other circumstances with less than three valid samples being obtained, compliance may be determined using the arithmetic mean of the results of the other two runs upon the Director's approval.
6. All testing and sampling will be performed in accordance with recognized methods and as specified by the Director.



Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section I. General Provisions (continued)**

H. Testing and Sampling (NAC 445B.252) (*Federally Enforceable SIP Requirement*) (continued)

7. The cost of all testing and sampling and the cost of all sampling holes, scaffolding, electric power and other pertinent allied facilities as may be required and specified in writing by the Director must be provided and paid for by the owner of the stationary source.
8. All information and analytical results of testing and sampling must be certified as to their truth and accuracy and as to their compliance with all provisions of these regulations, and copies of these results must be provided to the Director no later than 60 days after the testing or sampling, or both.
9. Notwithstanding the provisions of subsection 2, the Director shall not approve an alternative method or equivalent method to determine compliance with a standard or emission limitation contained in Part 60, 61 or 63 of Title 40 of the Code of Federal Regulations for:
  - a. An emission unit that is subject to a testing requirement pursuant to Part 60, 61 or 63 of Title 40 of the Code of Federal Regulations; or
  - b. An affected source.

I. Permit Revision (NAC 445B.287(1)(b)) (*Federally Enforceable SIP Requirement*)

If a stationary source is a Class II source, a revision of the operating permit or the permit to construct is required pursuant to the requirements of NAC 445B.3465 before the stationary source may be modified.

J. Violations: Acts constituting: notice (NAC 445B.275) (*Federally Enforceable SIP Requirement*)

1. Failure to comply with any requirement of NAC 445B.001 to 445B.3791, inclusive, [NAC adopted as of October 2016 includes NAC 445B.001 to 445B.390, inclusive] any applicable requirement or any condition of an operating permit constitutes a violation. As required by NRS 445B.450, the Director shall issue a written notice of an alleged violation to any owner or operator for any violation, including, but not limited to:
  - a. Failure to apply for and obtain an operating permit;
  - b. Failure to construct a stationary source in accordance with the application for an operating permit as approved by the Director;
  - c. Failure to construct or operate a stationary source in accordance with any condition of an operating permit;
  - d. Commencing construction or modification of a stationary source without applying for and receiving an operating permit or a modification of an operating permit as required by NAC 445B.001 to 445B.3497, inclusive, [NAC adopted as of October 2016 includes NAC 445B.001 to 445B.3477, inclusive], or a mercury operating permit to construct as required by NAC 445B.3611 to 445B.3689, inclusive;
  - e. Failure to comply with any requirement for recordkeeping, monitoring, reporting or compliance certification contained in an operating permit; or
  - f. Failure to pay fees as required by NAC 445B.327 or 445B.3689.
2. The written notice must specify the provision of NAC 445B.001 to 445B.3791, inclusive, [NAC adopted as of October 2016 includes NAC 445B.001 to 445B.390, inclusive], the condition of the operating permit or the applicable requirement that is being violated.
3. Written notice shall be deemed to have been served if delivered to the person to whom addressed or if sent by registered or certified mail to the last known address of the person.

K. Operating permits: Imposition of more stringent standards for emissions (NAC 445B.305)

(*Federally Enforceable SIP Requirement*)

1. The Director may impose standards for emissions on a proposed stationary source that are more stringent than those found in NAC 445B.001 to 445B.3689, inclusive, [NAC adopted as of October 2016 includes NAC 445B.001 to 445B.390, inclusive], as a condition of approving an operating permit for the proposed stationary source.



Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section I. General Provisions (continued)**

L. Contents of operating permits: Exception for operating permits to construct; required conditions (NAC 445B.315)  
(Federally Enforceable SIP Requirement)

1. Notwithstanding any provision of this section to the contrary, the provisions of this section do not apply to operating permits to construct.
2. The Director shall cite the legal authority for each condition contained in an operating permit.
3. An operating permit must contain the following conditions:
  - a. The term of the operating permit is 5 years.
  - b. The holder of the operating permit shall retain records of all required monitoring data and supporting information for 5 years after the date of the sample collection, measurement, report or analysis. Supporting information includes all records regarding calibration and maintenance of the monitoring equipment and all original strip-chart recordings for continuous monitoring instrumentation.
  - c. Each of the conditions and requirements of the operating permit is severable, and if any are held invalid, the remaining conditions and requirements continue in effect.
  - d. The holder of the operating permit shall comply with all conditions of the operating permit. Any noncompliance constitutes a violation and is a ground for:
    - (1) An action for noncompliance;
    - (2) Revising, revoking, reopening and revising, or terminating the operating permit by the Director; or
    - (3) Denial of an application for a renewal of the operating permit by the Director.
  - e. The need to halt or reduce activity to maintain compliance with the conditions of the operating permit is not a defense to noncompliance with any condition of the operating permit.
  - f. The Director may revise, revoke and reissue, reopen and revise, or terminate the operating permit for cause.
  - g. The operating permit does not convey any property rights or any exclusive privilege.
  - h. The holder of the operating permit shall provide the Director, in writing and within a reasonable time, with any information that the Director requests to determine whether cause exists for revising, revoking and reissuing, reopening and revising, or terminating the operating permit, or to determine compliance with the conditions of the operating permit.
  - i. The holder of the operating permit shall pay fees to the Director in accordance with the provisions set forth in NAC 445B.327 and 445B.331.
  - j. The holder of the operating permit shall allow the Director or any authorized representative, upon presentation of credentials, to:
    - (1) Enter upon the premises of the holder of the operating permit where:
      - (i) The stationary source is located;
      - (ii) Activity related to emissions is conducted; or
      - (iii) Records are kept pursuant to the conditions of the operating permit;
    - (2) Have access to and copy, during normal business hours, any records that are kept pursuant to the conditions of the operating permit;
    - (3) Inspect, at reasonable times, any facilities, practices, operations or equipment, including any equipment for monitoring or controlling air pollution, that are regulated or required pursuant to the operating permit; and
    - (4) Sample or monitor, at reasonable times, substances or parameters to determine compliance with the conditions of the operating permit or applicable requirements.
  - k. A responsible official of the stationary source shall certify that, based on information and belief formed after a reasonable inquiry, the statements made in any document required to be submitted by any condition of the operating permit are true, accurate and complete.





Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section I. General Provisions (continued)**

M. Operating permits: Assertion of emergency as affirmative defense to action for noncompliance (NAC 445B.326)  
(State Only Requirement)

1. A holder of an operating permit may assert an affirmative defense to an action brought for noncompliance with a technology-based emission limitation contained in the operating permit if the holder of the operating permit demonstrates through signed, contemporaneous operating logs or other relevant evidence, that:
  - a. An emergency occurred and the holder of the operating permit can identify the cause of the emergency;
  - b. The facility was being properly operated at the time of the emergency;
  - c. During the emergency, the holder of the operating permit took all reasonable steps to minimize excess emissions; and
  - d. The holder of the operating permit submitted notice of the emergency to the Director within 2 working days after the emergency. The notice must contain a description of the emergency, any steps taken to mitigate emissions, and any corrective actions taken to restore the normal operation of the facility.
2. In any action for noncompliance, the holder of an operating permit who asserts the affirmative defense of an emergency has the burden of proof.

N. Operating permits: Revocation and reissuance (NAC 445B.3265) (State Only Requirement)

1. An operating permit may be revoked if the control equipment is not operating.
2. An operating permit may be revoked by the Director upon determining that there has been a violation of NAC 445B.001 to 445B.390, inclusive, or the provisions of 40 CFR 52.21, or 40 CFR Part 60 or 61, Prevention of Significant Deterioration, New Source Performance Standards, and National Emission Standards for Hazardous Air Pollutants, adopted by reference in NAC 445B.221.
3. The revocation is effective 10 days after the service of a written notice, unless a hearing is requested.
4. To reissue a revoked operating permit, the holder of the revoked permit must file a new application with the Director, accompanied by the fee for an initial operating permit as specified in NAC 445B.327. An environmental review of the stationary source must be conducted as though construction had not yet commenced.

O. Required contents of permit (NAC 445B.346) (Federally Enforceable SIP Requirement)

In addition to the conditions set forth in NAC 445B.315, Class II operating permits must contain, as applicable:

1. Emission limitations and standards, including those operational requirements and limitations that ensure compliance with the conditions of the operating permit.
2. All requirements for monitoring, testing and reporting that apply to the stationary source.
3. A requirement that the owner or operator of the stationary source promptly report any deviations from any requirements of the operating permit.
4. The terms and conditions for any reasonably anticipated alternative operating scenarios identified by the owner or operator of the stationary source in his or her application and approved by the Director. Such terms and conditions must require the owner or operator to keep a contemporaneous log of changes from one alternative operating scenario to another.
5. A schedule of compliance for stationary sources that are not in compliance with any applicable requirement or NAC 445B.001 to 445B.3689, inclusive, [NAC adopted as of October 2016 includes NAC 445B.001 to 445B.390, inclusive], at the time the operating permit is issued, including:
  - a. Semiannual progress reports and a schedule of dates for achieving milestones;
  - b. Prior notice of and explanations for missed deadlines; and
  - c. Any preventive or corrective measures taken.

\*\*\*\*End of General Provisions\*\*\*\*



Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section II. General Monitoring, Recordkeeping, and Reporting Conditions**

A. Records Retention (NAC 445B.315(3)(b)) (*Federally Enforceable SIP Requirement*)

The holder of the operating permit shall retain records of all required monitoring data and supporting information for 5 years after the date of the sample collection, measurement, report or analysis. Supporting information includes all records regarding calibration and maintenance of the monitoring equipment and all original strip-chart recordings for continuous monitoring instrumentation.

B. Deviations (NAC 445B.346(3)) (*Federally Enforceable SIP Requirement*)

Under the authority of NAC 445B.346(3), and in addition to the conditions set forth in NAC 445B.315, the owner or operator of the stationary source shall promptly report to the Director any deviations from the requirements of the operating permit. The report to the Director shall include the probable cause of all deviations and any action taken to correct the deviations. For the operating permit, prompt is defined as submittal of a report within 15 days of the deviation. This definition does not alter any reporting requirements as established for reporting of excess emissions as required under NAC 445B.232 as reproduced in Section I.G.  
E-mail notifications to: [cenotify@ndep.nv.gov](mailto:cenotify@ndep.nv.gov)

C. Yearly Reports (NAC 445B.315(3)(h), NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*)

Under the authority of NAC 445B.315(3)(h) and NAC 445B.346(2), the Permittee will submit yearly reports including, but not limited to, throughput, production, fuel consumption, hours of operation, and emissions. These reports will be submitted on the form provided by the Bureau of Air Pollution Control for all emission units/systems specified on the form. The completed form must be submitted to the Bureau of Air Pollution Control no later than March 1 annually for the preceding calendar year.

**\*\*\*\*End of General Monitoring, Recordkeeping, and Reporting Conditions\*\*\*\***



Bureau of Air Pollution Control

Facility ID No. A0528

Permit No. AP3324-1253.03

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section III. General Construction Conditions**

A. Notification (NAC 445B.250; NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*)

Under the authority of NAC 445B.250 and NAC 445B.346; the Director shall be notified in writing of the following for S2.035 through S2.044

1. The date construction (or reconstruction as defined under NAC 445B.247) of the affected facility is commenced, postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.
2. The anticipated date of initial startup of an affected facility, postmarked no more than 60 days and no less than 30 days prior to such date.
3. The actual date of initial startup of the affected facility, postmarked within 15 days after such date.
4. The date upon which demonstration of the continuous monitoring system performance commences in accordance with NAC 445B.256 to 445B.267, inclusive. Notification must be postmarked not less than 30 days before such date.

\*\*\*\*End of General Construction Conditions\*\*\*\*





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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section IV. Specific Construction Requirements**

A. Initial Opacity Compliance Demonstration and Initial Performance Tests (NAC 445B.22017, NAC 445B.252, NAC 445B.346(2))  
(Federally Enforceable SIP Requirement)

1. the authority of NAC 445B.22017, NAC 445B.252, and NAC 445B.346, the Permittee, upon issuance of this operating permit, shall conduct initial opacity compliance demonstrations and/or initial performance tests within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup. The Permittee shall follow the test methods and procedures referenced in Table IV-1 and Table IV-2 below:

**Table IV-1: Initial Opacity Compliance Demonstration**

System	System	Pollutant To Be Tested	System
System 3 – Air Furnaces (Electric)	S2.035 & S2.036	Opacity	Method 9 in Appendix A of 40 CFR Part 60 shall be used to determine opacity. Opacity observations shall be conducted concurrently with the applicable performance test. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15 second intervals), unless otherwise specified by an applicable subpart.
System 4 - Part Removal	S2.011, S2.012, S2.014, S2.017, and S2.018		
System 5 – Sand Blast Cleaning Equipment	S2.033, S2.037, and S2.044		
System 7 – Gate Removal Equipment	S2.038 through S2.042		
System 9 – Ingot Cutoff Saw	2.043		



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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section IV. Specific Construction Requirements (continued)**

A. Initial Opacity Compliance Demonstration and Initial Performance Tests (NAC 445B.22017, NAC 445B.252, NAC 445B.346(2))  
(Federally Enforceable SIP Requirement) (continued)

- I. the authority of NAC 445B.22017, NAC 445B.252, and NAC 445B.346, the Permittee, upon issuance of this operating permit, shall conduct initial opacity compliance demonstrations and/or initial performance tests within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup. The Permittee shall follow the test methods and procedures referenced in Table IV-1 and Table IV-2 below:

**Table IV-2: Initial Performance Tests**

System	Emission Unit(s)	Pollutant To Be Tested	Testing Methods/Procedures
System 5 – Sand Blast Cleaning Equipment	S2.033 S2.037 S2.044	PM	Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine PM emissions. The sample volume for each test run shall be at least 1.7 dscm (60 dscf). Test runs must be conducted for up to two hours in an effort to collect this minimum sample.
System 7 – Gate Removal Equipment	S2.038 through S2.042		
System 9 – Ingot Cutoff Saw	2.043		
System 5 – Sand Blast Cleaning Equipment	S2.033 S2.037 S2.044	PM <sub>10</sub> , PM <sub>2.5</sub>	Method 201A in Appendix M of 40 CFR Part 51 shall be used to determine PM <sub>10</sub> and PM <sub>2.5</sub> emissions. The sample time and sample volume collected for each test run shall be sufficient to collect enough mass to weigh accurately.  The Method 201A test required in this section may be replaced by a Method 5 in Appendix A of 40 CFR Part 60 test. All particulate captured in the Method 5 test performed under this provision shall be considered PM <sub>2.5</sub> for determination of compliance.
System 7 – Gate Removal Equipment	S2.038 through S2.042		
System 9 – Ingot Cutoff Saw	2.043		





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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

**Section IV. Specific Construction Requirements (continued)**

- A. Initial Opacity Compliance Demonstration and Initial Performance Tests (NAC 445B.22017, NAC 445B.252, NAC 445B.346(2))  
(*Federally Enforceable SIP Requirement*) (continued)
2. All initial opacity compliance demonstrations and initial performance tests must comply with the advance notification, protocol review, operational conditions, reporting, and other requirements of **Section I.H. Testing and Sampling** (NAC 445B.252) of this operating permit. Material sampling must be conducted in accordance with protocols approved by the Director. All initial performance test results shall be based on the arithmetic average of three valid runs. (NAC 445B.252(5))
  3. Testing shall be conducted on the exhaust stack (post controls).
  4. Initial opacity compliance demonstrations and initial performance tests, as specified in Table IV-1 and Table IV-2 above, must be conducted under such conditions as the Director specifies to the operator of the plant based on representative performance of the affected facility. The Permittee shall make available to the Director such records as may be necessary to determine the conditions of the initial opacity compliance demonstrations and initial performance tests. Operations during periods of startup, shutdown and malfunction must not constitute representative conditions of the initial opacity compliance demonstrations and initial performance tests unless otherwise specified in the applicable standard. (NAC 445B.252(3))
  5. The Permittee shall give notice to the Director 30 days before the initial opacity compliance demonstrations and initial performance tests to allow the Director to have an observer present. A written testing procedure must be submitted to the Director at least 30 days before the initial opacity compliance demonstrations and initial performance tests to allow the Director to review the proposed testing procedures. (NAC 445B.252(4) and 40 CFR Part 60.7(a)(6))
  6. Within 60 days after completing the initial opacity compliance demonstrations and initial performance tests contained in Table IV-1 and Table IV-2 of this section, the Permittee shall furnish the Director a written report of the results. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive. (NAC 445B.252(8))
  7. Initial opacity compliance demonstrations and initial performance tests required under this section that are conducted below the maximum allowable throughput, shall be subject to the Director's review to determine if the throughputs during the initial opacity compliance demonstrations and initial performance tests were sufficient to provide adequate compliance demonstration. Should the Director determine that the initial opacity compliance demonstrations and initial performance tests do not provide adequate compliance demonstration, the Director may require additional testing.

**\*\*\*\*End of Specific Construction Requirements\*\*\*\***



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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Section V. Specific Operating Conditions

A. Emission Unit S2.001

System 1 - Steam Heated Autoclave		Location UTM (Zone 11, NAD 83)	
		m North	m East
S2.001	Melco Steel Autoclave	4,342,389	263,596

1. Air Pollution Control Equipment (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)
  - a. Emissions from S2.001 shall have no add-on controls.
  - b. Descriptive Stack Parameters  
 Stack Height: 26 feet  
 Stack Diameter: 0.083 feet  
 Stack Temperature: 337°F  
 Exhaust Flow: 918 dry standard cubic feet per minute (dscfm)
  
2. Operating Parameters (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)
  - a. The maximum allowable throughput rate for S2.001 shall not exceed **0.85** tons of **metal alloy** per any one-hour period, nor more than **6,242.0** tons per year.
  - b. Hours
    - (1) S2.001 may operate a total of **19.5** hours per day.
    - (2) S2.001 may operate a total of **7,117.5** hours per year.
    - (3) S2.001 may operate from **4:00 AM to 11:30 PM**.
  
3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (*Federally Enforceable SIP Requirement*)  
 The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere from S2.001 the following pollutants in excess of the following specified limits:
  - a. The discharge of **VOCs** (volatile organic compounds) to the atmosphere shall not exceed **1.73** pounds per hour, nor more than **6.34** tons per year.
  - b. The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **6.36** tons per year.
  - c. The opacity from S2.001 shall not equal or exceed **20** percent.
  
4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*)  
 The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.
  - a. Monitor and record the throughput for S2.001 on a daily basis.
  - b. Monitor and record the times at which operations start and stop as well as the total daily hours of operation for S2.001.
  - c. Record the corresponding average hourly throughput rate in tons per hour. The average hourly throughput rate shall be determined from the total daily throughput and the total daily hours of operation.
  - d. Monitor and record the total yearly throughput rate in tons per year. The annual throughput shall be determined at the end of each month as the sum of the monthly throughput rates for the year for all previous months of that year.
  - e. Monitor and record the total yearly hours of operation per year. The annual hours of operation shall be determined at the end of each month as the sum of the monthly hours of operation for all previous months of that year.





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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Section V. Specific Operating Conditions

A. Emission Unit S2.001 (continued)

5. Performance Testing (NAC 445B.346(2), NAC 445B.252(1)) (Federally Enforceable SIP Requirement)

The Permittee, upon issuance of this operating permit, shall conduct renewal performance testing at least 90 days prior to the expiration of this operating permit, but no earlier than 365 days from the date of expiration of this operating permit, and every 5 years thereafter, in accordance with the following:

- a. All opacity compliance demonstrations and/or performance tests must comply with the advance notification, protocol review, operational conditions, reporting, and other requirements of Section I.H. Testing and Sampling (NAC 445B.252) of this operating permit. All performance test results shall be based on the arithmetic average of three valid runs (NAC 445B.252(5)).
- b. Testing shall be conducted on the exhaust stack (post controls).
- c. Method 9 in Appendix A of 40 CFR Part 60 shall be used to determine opacity. Opacity observations shall be conducted concurrently with the applicable performance test. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15 second intervals), unless otherwise specified by an applicable subpart.
- d. Method 25A in Appendix A of 40 CFR Part 60 shall be used to determine the volatile organic compound concentration. Method 18 in Appendix A of 40 CFR Part 60 or Method 320 in Appendix A of CFR Part 63 may be used in conjunction with Method 25A to break out the organic compounds that are not considered VOC's by definition per 40 CFR 51.100(s). Each Method 25A test will be run for a minimum of one hour.

6. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (Federally Enforceable SIP Requirement)

S2.001 is subject to the requirements in Section V.J- National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources of this permit.



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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Section V. Specific Operating Conditions (continued)

B. Emission Units S2.002 through S2.005

System 2 - Mold Burnout Furnaces (non-combustion)		Location UTM (Zone 11, NAD 83)	
		m North	m East
S2.002	Self-Fabricated Furnace "F" (S004/007) - 1.68 MMBtu	4,342,382	263,611
S2.003	Pacific Kiln Mold Burnout Furnace 1 - 4.2 MMBtu	4,342,376	263,592
S2.004	Pacific Kiln Mold Burnout Furnace 2 - 4.2 MMBtu	4,342,370	263,593
S2.005	Pacific Kiln Mold Burnout Furnace (S004/093) - 1.69 MMBtu	4,342,386	263,604

1. Air Pollution Control Equipment (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)

a. Emissions from **S2.002 through S2.005, each**, shall have no add-on controls.

b. Descriptive Stack Parameters for S2.002

Stack Height: 28 feet

Stack Diameter: 1.0 feet

Stack Temperature: 1500°F

Exhaust Flow: 1,667 dry standard cubic feet per minute (dscfm)

c. Descriptive Stack Parameters for S2.003 and S2.004

Stack Height: 28 feet

Stack Diameter: 2.0 feet

Stack Temperature: 1500°F

Exhaust Flow: 7,523 dry standard cubic feet per minute (dscfm)

d. Descriptive Stack Parameters for S2.005

Stack Height: 28 feet

Stack Diameter: 1.5 feet

Stack Temperature: 1500°F

Exhaust Flow: 2,885 dry standard cubic feet per minute (dscfm)

2. Operating Parameters (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)

a. The maximum allowable throughput rate for **S2.002 through S2.005, combined** shall not exceed **2.14 tons of metal alloy** per any one-hour period, nor more than **6,242.0 tons** per year.

b. The maximum allowable throughput rate for **S2.002** shall not exceed **1,647.1 scf of natural gas** per any one-hour period, nor more than **11,722,949.6 scf** per year.

c. The maximum allowable throughput rate for **S2.003 and S2.004, each**, shall not exceed **4,117.7 scf of natural gas** per any one-hour period, nor more than **36,070,588.0 scf** per year.

d. The maximum allowable throughput rate for **S2.005** shall not exceed **1,656.9 scf of natural gas** per any one-hour period, nor more than **11,792,701.1 scf** per year.

e. Hours

(1) **S2.002 through S2.005, each** may operate a total of **19.5 hours** per day.

(2) **S2.002 through S2.005, each** may operate a total of **7,117.5 hours** per year.

(3) **S2.002 through S2.005, each** may operate from **4:00 AM to 11:30 PM**.





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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Section V. Specific Operating Conditions (continued)

B. Emission Units S2.002 through S2.005 (continued)

3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (Federally Enforceable SIP Requirement)

- a. The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere for **S2.002 and S2.005, each**, the following pollutants, **from fuel combustion**, in excess of the following specified limits:
- (1) The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.013** pounds per hour, nor more than **0.045** tons per year.
  - (2) The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.013** pounds per hour, nor more than **0.045** tons per year.
  - (3) discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.013** pounds per hour, nor more than **0.045** tons per year.
  - (4) The discharge of **SO<sub>2</sub>** (sulfur dioxide) to the atmosphere shall not exceed **0.00099** pounds per hour, nor more than **0.0035** tons per year.
  - (5) The discharge of **NO<sub>x</sub>** (oxides of nitrogen) to the atmosphere shall not exceed **0.16** pounds per hour, nor more than **0.59** tons per year.
  - (6) The discharge of **CO** (carbon monoxide) to the atmosphere shall not exceed **0.14** pounds per hour, nor more than **0.49** tons per year.
  - (7) The discharge of **VOCs** (volatile organic compounds) to the atmosphere shall not exceed **0.0091** pounds per hour, nor more than **0.032** tons per year.
  - (8) The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.011** tons per year.
  - (9) The opacity from **S2.002 and S2.005** shall not equal or exceed **20** percent.
- b. The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere for **S2.003 and S2.004, each**, the following pollutants, **from fuel combustion**, in excess of the following specified limits:
- (1) The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.031** pounds per hour, nor more than **0.11** tons per year.
  - (2) The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.031** pounds per hour, nor more than **0.11** tons per year.
  - (3) discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.031** pounds per hour, nor more than **0.11** tons per year.
  - (4) The discharge of **SO<sub>2</sub>** (sulfur dioxide) to the atmosphere shall not exceed **0.0025** pounds per hour, nor more than **0.0088** tons per year.
  - (5) The discharge of **NO<sub>x</sub>** (oxides of nitrogen) to the atmosphere shall not exceed **0.41** pounds per hour, nor more than **1.47** tons per year.
  - (6) The discharge of **CO** (carbon monoxide) to the atmosphere shall not exceed **0.35** pounds per hour, nor more than **1.23** tons per year.
  - (7) The discharge of **VOCs** (volatile organic compounds) to the atmosphere shall not exceed **0.023** pounds per hour, nor more than **0.081** tons per year.
  - (8) The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.028** tons per year.
  - (9) The opacity from **S2.003 and S2.004, each**, shall not equal or exceed **20** percent.



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CLASS II AIR QUALITY OPERATING PERMIT

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Section V. Specific Operating Conditions (continued)

B. Emission Units S2.002 through S2.005 (continued)

3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (*Federally Enforceable SIP Requirement*) (continued)

c. The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere for **S2.002 through S2.005, combined** the following pollutants generated **from process throughput** in excess of the following specified limits:

- (1) The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.057** pounds per hour, nor more than **0.083** tons per year.
- (2) The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.057** pounds per hour, nor more than **0.083** tons per year.
- (3) discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.057** pounds per hour, nor more than **0.083** tons per year.
- (4) The discharge of **CO** (carbon monoxide) to the atmosphere shall not exceed **1.97** pounds per hour, nor more than **2.87** tons per year.
- (5) The discharge of **VOCs** (volatile organic compounds) to the atmosphere shall not exceed **2.53** pounds per hour, nor more than **3.96** tons per year.
- (6) The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **2.96** tons per year.
- (7) The opacity from **S2.002 through S2.005** shall not equal or exceed **20** percent.

4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*)

The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.

- a. Monitor and record the throughput for **S2.002 through S2.005, each**, on a daily basis.
- b. Monitor and record the times at which operations start and stop as well as the total daily hours of operation for **S2.002 through S2.005, each**.
- c. Record the corresponding average hourly throughput rate in tons per hour. The average hourly throughput rate shall be determined from the total daily throughput and the total daily hours of operation.
- d. Monitor and record the total yearly throughput rate in tons per year. The annual throughput shall be determined at the end of each month as the sum of the monthly throughput rates for the year for all previous months of that year.
- e. Monitor and record the total yearly hours of operation per year. The annual hours of operation shall be determined at the end of each month as the sum of the monthly hours of operation for all previous months of that year.





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Section V. Specific Operating Conditions (continued)

B. Emission Units S2.002 through S2.005 (continued)

5. Performance and Compliance Testing (NAC 445B.346(2), NAC 445B.252(1)) (Federally Enforceable SIP Requirement) (continued)

The Permittee, upon issuance of this operating permit, shall conduct renewal performance testing. Testing shall be completed on one exhaust stack, of the Permittee's choice, exhausting the combustion of one furnace, and the maximum hourly throughput for the entire system being processed through that furnace, at least 90 days prior to the expiration of this operating permit, but no earlier than 365 days from the date of expiration of this operating permit, and every 5 years thereafter, in accordance with the following:

- a. All opacity compliance demonstrations and/or performance tests must comply with the advance notification, protocol review, operational conditions, reporting, and other requirements of Section I.H. Testing and Sampling (NAC 445B.252) of this operating permit. All performance test results shall be based on the arithmetic average of three valid runs (NAC 445B.252(5)).
- b. Testing shall be conducted on the exhaust stack (post controls).
- c. Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine PM emissions. The sample volume for each test run shall be at least 1.7 dscm (60 dscf). Test runs must be conducted for up to two hours in an effort to collect this minimum sample.
- d. Method 201A and Method 202 in Appendix M of 40 CFR Part 51 shall be used to determine PM<sub>10</sub> and PM<sub>2.5</sub> emissions. The sample time and sample volume collected for each test run shall be sufficient to collect enough mass to weigh accurately.
- e. The Method 201A and 202 test required in this section may be replaced by a Method 5 in Appendix A of 40 CFR Part 60 and Method 202 in Appendix M of 40 CFR Part 51 test. All particulate captured in the Method 5 and Method 202 test performed under this provision shall be considered PM<sub>2.5</sub> for determination of compliance.
- f. Method 6C in Appendix A of 40 CFR Part 60 shall be used to determine the sulfur dioxide concentration. Each test will be run for a minimum of one hour.
- g. Method 7E in Appendix A of 40 CFR Part 60 shall be used to determine the nitrogen oxides concentration. Each test will be run for a minimum of one hour.
- h. Method 9 in Appendix A of 40 CFR Part 60 shall be used to determine opacity. Opacity observations shall be conducted concurrently with the applicable performance test. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15 second intervals), unless otherwise specified by an applicable subpart.
- i. Method 10 in Appendix A of 40 CFR Part 60 shall be used to determine the carbon monoxide concentration. Each test will be run for a minimum of one hour.
- j. Method 25A in Appendix A of 40 CFR Part 60 shall be used to determine the volatile organic compound concentration. Method 18 in Appendix A of 40 CFR Part 60 or Method 320 in Appendix A of CFR Part 63 may be used in conjunction with Method 25A to break out the organic compounds that are not considered VOC's by definition per 40 CFR 51.100(s). Each Method 25A test will be run for a minimum of one hour.

6. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (Federally Enforceable SIP Requirement)  
S2.002 through S2.005 are subject to the requirements in Section V.J- National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources of this permit.



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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Section V. Specific Operating Conditions (continued)

C. Emission Units S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010

System 3 - Air Furnaces (Electric)		Location UTM (Zone 11, NAD 83)	
		m North	m East
S2.006	InductoTherm Furnace 1	4,342,374	263,601
S2.007	InductoTherm Furnace 2	4,342,374	263,601
S2.008	InductoTherm Furnace 3	4,342,374	263,601
S2.009	InductoTherm Furnace 4	4,342,374	263,601
S2.035	CLA Air Furnace – (Discharge to atmosphere through three roof vents)	4,342,381	263,601
		4,342,376	263,604
		4,342,380	263,613
S2.036	Lift Coil Air Furnace – (Discharge to atmosphere through three roof vents)	4,342,381	263,601
		4,342,376	263,604
		4,342,380	263,613
S2.010	Vacuum Furnace – (Discharge to atmosphere through three roof vents)	4,342,381	263,601
		4,342,376	263,604
		4,342,380	263,613

1. Air Pollution Control Equipment (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)
  - a. Emissions from **S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010** each, shall have no add-on controls.
  - b. Descriptive Stack Parameters for S2.006, S2.007, S2.008, and S2.009  
 Stack Height: 26 feet  
 Stack Diameter: 0.8 feet  
 Stack Temperature: 815°F  
 Exhaust Flow: 2,880 dry standard cubic feet per minute (dscfm)
  - c. **S2.010, S2.035 and S2.036** shall be vented through three roof vents.
  
2. Operating Parameters (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)
  - a. The maximum allowable throughput rate for **S2.006, S2.007, S2.008, S2.009, combined**, shall not exceed **0.56 tons of metal alloy** per any one-hour period, nor more than **4,004.0 tons** per year.
  - b. The maximum allowable throughput rate for **S2.010, S2.035, and S2.036, combined**, shall not exceed **0.23 tons of metal alloy** per any one-hour period, nor more than **1,071.0 tons** per year.
  - c. Hours
    - (1) **S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010, each**, may operate a total of **19.5 hours** per day.
    - (2) **S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010, each**, may operate a total of **7,117.5 hours** per year.
    - (3) **S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010, each**, may operate from **4:00 AM to 11:30 PM**.





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Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Section V. Specific Operating Conditions (continued)

C. Emission Units S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010 (continued)

3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (*Federally Enforceable SIP Requirement*)
  - a. The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere from **S2.006, S2.007, S2.008, and S2.009, combined**, the following pollutants in excess of the following specified limits:
    - (1) The discharge of **PM** (particulate matter) to the atmosphere shall not exceed **0.18** pounds per hour, nor more than **0.62** tons per year.
    - (2) The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.18** pounds per hour, nor more than **0.62** tons per year.
    - (3) The discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.18** pounds per hour, nor more than **0.62** tons per year.
    - (4) The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.23** tons per year.
    - (5) The opacity from the stack exhausting **S2.006, S2.007, S2.008, and S2.009** shall not equal or exceed **20** percent.
  - b. The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere from **S2.010, S2.035, and S2.036, combined**, the following pollutants in excess of the following specified limits:
    - (1) The discharge of **PM** (particulate matter) to the atmosphere shall not exceed **0.056** pounds per hour, nor more than **0.11** tons per year.
    - (2) The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.056** pounds per hour, nor more than **0.11** tons per year.
    - (3) The discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.056** pounds per hour, nor more than **0.11** tons per year.
    - (4) The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.042** tons per year.
    - (5) The opacity from the roof vents exhausting **S2.010, S2.035, and S2.036** shall not equal or exceed **20** percent.
4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*)

The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.

  - a. Monitor and record the throughput for **S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010, each**, on a daily basis.
  - b. Monitor and record the times at which operations start and stop as well as the total daily hours of operation for **S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010**.
  - c. Record the corresponding average hourly throughput rate in tons per hour. The average hourly throughput rate shall be determined from the total daily throughput and the total daily hours of operation.
  - d. Monitor and record the total yearly throughput rate in tons per year. The annual throughput shall be determined at the end of each month as the sum of the monthly throughput rates for the year for all previous months of that year.
  - e. Monitor and record the total yearly hours of operation per year. The annual hours of operation shall be determined at the end of each month as the sum of the monthly hours of operation for all previous months of that year.



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**Section V. Specific Operating Conditions (continued)**

**C. Emission Units S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010 (continued)**

5. Performance and Compliance Testing (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)  
The Permittee, upon issuance of this operating permit, shall conduct renewal performance testing **on S2.006 through S2.009, combined**, at least 90 days prior to the expiration of this operating permit, but no earlier than 365 days from the date of expiration of this operating permit, and every 5 years thereafter, in accordance with the following:
  - a. All opacity compliance demonstrations and/or performance tests must comply with the advance notification, protocol review, operational conditions, reporting, and other requirements of Section I.H. Testing and Sampling (NAC 445B.252) of this operating permit. All performance test results shall be based on the arithmetic average of three valid runs (NAC 445B.252(5)).
  - b. Testing shall be conducted on the exhaust stack (post controls).
  - c. Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine PM emissions. The sample volume for each test run shall be at least 1.7 dscm (60 dscf). Test runs must be conducted for up to two hours in an effort to collect this minimum sample.
  - d. Method 201A and Method 202 in Appendix M of 40 CFR Part 51 shall be used to determine PM<sub>10</sub> and PM<sub>2.5</sub> emissions. The sample time and sample volume collected for each test run shall be sufficient to collect enough mass to weigh accurately.
  - e. The Method 201A and 202 test required in this section may be replaced by a Method 5 in Appendix A of 40 CFR Part 60 and Method 202 in Appendix M of 40 CFR Part 51 test. All particulate captured in the Method 5 and Method 202 test performed under this provision shall be considered PM<sub>2.5</sub> for determination of compliance.
  - f. Method 9 in Appendix A of 40 CFR Part 60 shall be used to determine opacity. Opacity observations shall be conducted concurrently with the applicable performance test. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15 second intervals), unless otherwise specified by an applicable subpart.
  
6. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)  
S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010 are subject to the requirements in **Section V.J - National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources** of this permit.





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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: PCC STRUCTURALS, INC. (AS PERMITTEE)

Section V. Specific Operating Conditions (continued)

D. Emission Units S2.011, S2.012, S2.014, S2.017 and S2.018

System 4 - Part Removal		Location UTM (Zone 11, NAD 83)	
		m North	m East
S2.011	Tabor 24" Abrasive Chop-saw (S006/016)	4,342,360	263,626
S2.012	Tabor 16" Abrasive Chop-saw (S006/020)	4,342,360	263,626
S2.014	Blade Stop	4,342,360	263,626
S2.017	Self-Fabricated Knockout Station	4,342,360	263,626
S2.018	Thermadyne Plasma Arc (S006/031)	4,342,360	263,626

1. Air Pollution Control Equipment (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)
  - a. Emissions from **S2.011, S2.012, S2.014, S2.017 and S2.018, combined**, shall be controlled by a **dust collector (DC-001)**.
  - b. Descriptive Stack Parameters  
 Stack Height: 25 feet  
 Stack Diameter: 3 feet  
 Stack Temperature: 60°F  
 Exhaust Flow: 12,074 dry standard cubic feet per minute (dscfm)
  
2. Operating Parameters (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)
  - a. The maximum allowable throughput rate for **S2.011, S2.012, S2.014, S2.017 and S2.018, combined**, shall not exceed **3.21 tons of metal alloy** per any one-hour period, nor more than **6,242.0 tons** per year.
  - b. Hours
    - (1) **S2.011, S2.012, S2.014, S2.017 and S2.018, each**, may operate a total of **19.5 hours** per day.
    - (2) **S2.011, S2.012, S2.014, S2.017 and S2.018, each**, may operate a total of **7,117.5 hours** per year.
    - (3) **S2.011, S2.012, S2.014, S2.017 and S2.018, each**, may operate from **4:00 AM to 11:30 PM**.
  
3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (*Federally Enforceable SIP Requirement*)  
 The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere from **S2.011, S2.012, S2.014, S2.017 and S2.018, combined**, the following pollutants in excess of the following specified limits:
  - a. The discharge of **PM** (particulate matter) to the atmosphere shall not exceed **0.21 pounds** per hour, nor more than **0.74 tons** per year.
  - b. The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.21 pounds** per hour, nor more than **0.74 tons** per year.
  - c. The discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.21 pounds** per hour, nor more than **0.74 tons** per year.
  - d. The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.097 tons** per year.
  - e. The opacity from **S2.011 through S2.019, and S2.033, combined**, shall not equal or exceed **20 percent**.
  
4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*)  
 The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.
  - a. Monitor and record the throughput for **S2.011, S2.012, S2.014, S2.017 and S2.018, combined**, on a daily basis.



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Section V. Specific Operating Conditions (continued)

D. Emission Units S2.011, S2.012, S2.014, S2.017 and S2.018 (continued)

4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*) (continued)  
The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.
  - b. The dust collector (DC-001) must be operating any time S2.011, S2.012, S2.014, S2.017 or S2.018 are operating.
  - c. Monitor and record the times at which operations start and stop as well as the total daily hours of operation for S2.011, S2.012, S2.014, S2.017 and S2.018.
  - d. Record the corresponding average hourly throughput rate in tons per hour. The average hourly throughput rate shall be determined from the total daily throughput and the total daily hours of operation.
  - e. Monitor and record the total yearly throughput rate in tons per year. The annual throughput shall be determined at the end of each month as the sum of the monthly throughput rates for the year for all previous months of that year.
  - f. Monitor and record the total yearly hours of operation per year. The annual hours of operation shall be determined at the end of each month as the sum of the monthly hours of operation for all previous months of that year.
  - g. Conduct and record an observation of visible emissions (excluding water vapor) on the dust collector controlling S2.011, S2.012, S2.014, S2.017 and S2.018 on a monthly basis while operating. The observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented to their back. If visible emissions are observed and exceed the applicable opacity standard, the Permittee shall take immediate corrective action. The Permittee shall maintain in a contemporaneous log the following recordkeeping: the calendar date of any required monitoring, results of the monthly observation of visible emissions, and any corrective actions taken.
  - h. Inspect the dust collector installed on S2.011, S2.012, S2.014, S2.017 and S2.018 in accordance with the manufacturer's operation and maintenance manual and record the results (e.g. the condition of the filter fabric) and any corrective actions taken.
  
5. Performance and Compliance Testing (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)  
The Permittee, upon issuance of this operating permit, shall conduct renewal performance testing at least 90 days prior to the expiration of this operating permit, but no earlier than 365 days from the date of expiration of this operating permit, and every 5 years thereafter, in accordance with the following:
  - a. All opacity compliance demonstrations and/or performance tests must comply with the advance notification, protocol review, operational conditions, reporting, and other requirements of Section I.H. Testing and Sampling (NAC 445B.252) of this operating permit. All performance test results shall be based on the arithmetic average of three valid runs (NAC 445B.252(5)).
  - b. Testing shall be conducted on the exhaust stack (post controls).
  - c. Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine PM emissions. The sample volume for each test run shall be at least 1.7 dscm (60 dscf). Test runs must be conducted for up to two hours in an effort to collect this minimum sample.
  - d. Method 201A in Appendix M of 40 CFR Part 51 shall be used to determine PM10 and PM2.5 emissions. The sample time and sample volume collected for each test run shall be sufficient to collect enough mass to weigh accurately.
  - e. The Method 201A test required in this section may be replaced by a Method 5 in Appendix A of 40 CFR Part 60. All particulate captured in the Method 5 test performed under this provision shall be considered PM2.5 for determination of compliance.
  - f. Method 9 in Appendix A of 40 CFR Part 60 shall be used to determine opacity. Opacity observations shall be conducted concurrently with the applicable performance test. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15 second intervals), unless otherwise specified by an applicable subpart.





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**Section V. Specific Operating Conditions (continued)**

**D. Emission Units S2.011, S2.012, S2.014, S2.017 and S2.018 (continued)**

6. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*) S2.011 through S2.019, and S2.033 are subject to the requirements in **Section V.J- National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources** of this permit.



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Section V. Specific Operating Conditions (continued)

E. Emission Units S2.020 through S2.027, S2.033, S2.037, and S2.044

System 5 - Sand Blast Cleaning Equipment		Location UTM (Zone 11, NAD 83)	
		m North	m East
S2.020	Clemco Blast Cabinet (S007/006)	4,342,355	263,614
S2.021	Clemco Blast Cabinet (S007/027)	4,342,355	263,614
S2.022	Clemco Blast Cabinet (S007/028)	4,342,355	263,614
S2.023	Goff Tumble Blast (S007/002)	4,342,355	263,614
S2.024	Goff Tumble Blast (S004/053)	4,342,355	263,614
S2.025	Pangborn Tumble Blast (S007/002)	4,342,355	263,614
S2.026	Clemco Blast Cabinet (S007/014)	4,342,355	263,614
S2.027	10" Abrasive Chopsaw (S006/011)	4,342,355	263,614
S2.033	Jet Arc Booth (S006/008)	4,342,355	263,614
S2.037	Clemco Hand Blast Cabinet – 100 Grit (2-28)	4,342,355	263,614
S2.044	Jet Arc Booth	4,342,355	263,614

1. Air Pollution Control Equipment (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)
  - a. Emissions from **S2.020 through S2.027, S2.033, S2.037, and S2.044, combined**, will be controlled by a **dust collector (DFE-324)**.
  - b. Descriptive Stack Parameters  
 Stack Height: 25 feet  
 Stack Diameter: 3 feet  
 Stack Temperature: 60°F  
 Exhaust Flow: 10,733 dry standard cubic feet per minute (dscfm)
  
2. Operating Parameters (NAC 445B.346(1)) (*Federally Enforceable SIP Requirement*)
  - a. The maximum allowable throughput rate for **S2.020 through S2.027, S2.033, S2.037, and S2.044, combined**, shall not exceed **1.1 tons of metal alloy** per any one-hour period, nor more than **6,242.0 tons** per year.
  - b. Hours
    - (1) **S2.020 through S2.027, S2.033, S2.037, and S2.044, each**, may operate a total of **19.5 hours** per day.
    - (2) **S2.020 through S2.027, S2.033, S2.037, and S2.044, each**, may operate a total of **7,117.5 hours** per year.
    - (3) **S2.020 through S2.027, S2.033, S2.037, and S2.044, each**, may operate from **4:00 AM to 11:30 PM**.
  
3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (*Federally Enforceable SIP Requirement*)  
 The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere from **S2.020 through S2.027, S2.033, S2.037, and S2.044, combined**, the following pollutants in excess of the following specified limits:
  - a. The discharge of **PM** (particulate matter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - b. The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - c. The discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - d. The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.0050 tons** per year.
  - e. The opacity from **S2.020 through S2.027, S2.033, S2.037, and S2.044, combined**, shall not equal or exceed **20 percent**.





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Section V. Specific Operating Conditions (continued)

E. Emission Units S2.020 through S2.027, S2.033, S2.037, and S2.044 (continued)

4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*)  
The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.
  - a. Monitor and record the throughput for S2.020 through S2.027, S2.033, S2.037, and S2.044, combined, on a daily basis.
  - b. The dust collector (DC-324) must be operating any time S2.020 through S2.027, S2.033, S2.037, or S2.044 are operating.
  - c. Monitor and record the times at which operations start and stop as well as the total daily hours of operation for S2.020 through S2.027, S2.033, S2.037, and S2.044.
  - d. Record the corresponding average hourly throughput rate in tons per hour. The average hourly throughput rate shall be determined from the total daily throughput and the total daily hours of operation.
  - e. Monitor and record the total yearly throughput rate in tons per year. The annual throughput shall be determined at the end of each month as the sum of the monthly throughput rates for the year for all previous months of that year.
  - f. Monitor and record the total yearly hours of operation per year. The annual hours of operation shall be determined at the end of each month as the sum of the monthly hours of operation for all previous months of that year.
  - g. Conduct and record an observation of visible emissions (excluding water vapor) on the dust collector controlling S2.020 through S2.027, S2.033, S2.037, and S2.044 on a monthly basis while operating. The observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented to their back. If visible emissions are observed and exceed the applicable opacity standard, the Permittee shall take immediate corrective action. The Permittee shall maintain in a contemporaneous log the following recordkeeping: the calendar date of any required monitoring, results of the monthly observation of visible emissions, and any corrective actions taken.
  - h. Inspect the dust collector installed on S2.020 through S2.027, S2.033, S2.037, and S2.044 in accordance with the manufacturer's operation and maintenance manual and record the results (e.g. the condition of the filter fabric) and any corrective actions taken.
  
5. Performance and Compliance Testing (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)  
The Permittee, upon issuance of this operating permit, shall conduct renewal performance testing at least 90 days prior to the expiration of this operating permit, but no earlier than 365 days from the date of expiration of this operating permit, and every 5 years thereafter, in accordance with the following:
  - a. All opacity compliance demonstrations and/or performance tests must comply with the advance notification, protocol review, operational conditions, reporting, and other requirements of Section I.H. Testing and Sampling (NAC 445B.252) of this operating permit. All performance test results shall be based on the arithmetic average of three valid runs (NAC 445B.252(5)).
  - b. Testing shall be conducted on the exhaust stack (post controls).
  - c. Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine PM emissions. The sample volume for each test run shall be at least 1.7 dscm (60 dscf). Test runs must be conducted for up to two hours in an effort to collect this minimum sample.
  - d. Method 201A in Appendix M of 40 CFR Part 51 shall be used to determine PM10 and PM2.5 emissions. The sample time and sample volume collected for each test run shall be sufficient to collect enough mass to weigh accurately.
  - e. The Method 201A test required in this section may be replaced by a Method 5 in Appendix A of
  - f. 40 CFR Part 60. All particulate captured in the Method 5 test performed under this provision shall be considered PM2.5 for determination of compliance.
  - g. Method 9 in Appendix A of 40 CFR Part 60 shall be used to determine opacity. Opacity observations shall be conducted concurrently with the applicable performance test. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15 second intervals), unless otherwise specified by an applicable subpart.



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**Section V. Specific Operating Conditions (continued)**

E. Emission Units S2.020 through S2.027, S2.033, S2.037, and S2.044 (continued)

6. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)  
S2.020 through S2.027, S2.033, S2.037, and S2.044 are subject to the requirements in Section V. J - National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources of this permit.





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Section V. Specific Operating Conditions (continued)

F. Emission Unit S2.028

System 6 - Hangar Blast Cleaning		Location UTM (Zone 11, NAD 83)	
		m North	m East
S2.028	Goff Hangar Blast (S007/022)	4,342,375	263,624

1. Air Pollution Control Equipment (NAC 445B.346(1)) (Federally Enforceable SIP Requirement)
  - a. Emissions from **S2.028** will be controlled by a **dust collector (DC-003)**.
  - b. Descriptive Stack Parameters  
 Stack Height: 25 feet  
 Stack Diameter: 1.37 feet  
 Stack Temperature: 60°F  
 Exhaust Flow: 10,733 dry standard cubic feet per minute (dscfm)
  
2. Operating Parameters (NAC 445B.346(1)) (Federally Enforceable SIP Requirement)
  - a. The maximum allowable throughput rate for **S2.028** shall not exceed **2.14** tons of **metal alloy** per any one-hour period, nor more than **6,242.0** tons per year.
  - b. Hours
    - (1) **S2.028** may operate a total of **19.5** hours per day.
    - (2) **S2.028** may operate a total of **7,117.5** hours per year.
    - (3) **S2.028** may operate from **4:00 AM to 11:30 PM**.
  
3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (Federally Enforceable SIP Requirement)
 

The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere from **S2.028** the following pollutants in excess of the following specified limits:

  - a. The discharge of **PM** (particulate matter) to the atmosphere shall not exceed **0.18** pounds per hour, nor more than **0.65** tons per year.
  - b. The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.18** pounds per hour, nor more than **0.65** tons per year.
  - c. The discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.18** pounds per hour, nor more than **0.65** tons per year.
  - d. The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.0017** tons per year.
  - e. The opacity from **S2.028** shall not equal or exceed **20** percent.
  
4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (Federally Enforceable SIP Requirement)
 

The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.

  - a. Monitor and record the throughput for **S2.028** on a daily basis.
  - b. Monitor and record the times at which operations start and stop as well as the total daily hours of operation for **S2.028**.
  - c. Record the corresponding average hourly throughput rate in tons per hour. The average hourly throughput rate shall be determined from the total daily throughput and the total daily hours of operation.
  - d. Monitor and record the total yearly throughput rate in tons per year. The annual throughput shall be determined at the end of each month as the sum of the monthly throughput rates for the year for all previous months of that year.
  - e. Monitor and record the total yearly hours of operation per year. The annual hours of operation shall be determined at the end of each month as the sum of the monthly hours of operation for all previous months of that year.



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**Section V. Specific Operating Conditions (continued)**

**F. Emission Unit S2.028 (continued)**

4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*) (*continued*)  
The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.
  - f. Conduct and record an observation of visible emissions (excluding water vapor) on the dust collector controlling S2.028 on a **monthly** basis while operating. The observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented to their back. If visible emissions are observed and exceed the applicable opacity standard, the Permittee shall take immediate corrective action. The Permittee shall maintain in a contemporaneous log the following recordkeeping: the calendar date of any required monitoring, results of the monthly observation of visible emissions, and any corrective actions taken.
  - g. Inspect the dust collector installed on S2.028 in accordance with the manufacturer's operation and maintenance manual and record the results (e.g. the condition of the filter fabric) and any corrective actions taken.
5. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)  
S2.028 is subject to the requirements in Section V. J - National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources of this permit.





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Section V. Specific Operating Conditions (continued)

G. Emission Units S2.029 through S2.031, and S2.038 through S2.042

System 7 - Gate Removal Equipment		Location UTM (Zone 11, NAD 83)	
		m North	m East
S2.029	Single Head Grinder 1	4,342,351	263,605
S2.030	Single Head Grinder 2	4,342,351	263,605
S2.031	Porter Cable 8" Platen Grinder (S009/002)	4,342,351	263,605
S2.038	Dual Belt Grinder	4,342,351	263,605
S2.039	Bader Grinder 1	4,342,351	263,605
S2.040	Bader Grinder 2	4,342,351	263,605
S2.041	CC Built 2" Belt Grinder	4,342,351	263,605
S2.042	Dual Belt Grinder	4,342,351	263,605

1. Air Pollution Control Equipment (NAC 445B.346(1)) (Federally Enforceable SIP Requirement)
  - a. Emissions from **S2.029 through S2.031, and S2.038 through S2.042, combined**, will be controlled by a **dust collector (DC-002)**.
  - b. Descriptive Stack Parameters  
 Stack Height: 25 feet  
 Stack Diameter: 1.37 feet  
 Stack Temperature: 60°F  
 Exhaust Flow: 10,733 dry standard cubic feet per minute (dscfm)
  
2. Operating Parameters (NAC 445B.346(1)) (Federally Enforceable SIP Requirement)
  - a. The maximum allowable throughput rate for **S2.029 through S2.031, and S2.038 through S2.042, combined**, shall not exceed **1.07 tons of metal alloy** per any one-hour period, nor more than **6,242.0 tons** per year.
  - b. Hours
    - (1) **S2.029 through S2.031, and S2.038 through S2.042, each**, may operate a total of **19.5 hours** per day.
    - (2) **S2.029 through S2.031, and S2.038 through S2.042, each**, may operate a total of **7,117.5 hours** per year.
    - (3) **S2.029 through S2.031, and S2.038 through S2.042, each**, may operate from **4:00 AM to 11:30 PM**.
  
3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (Federally Enforceable SIP Requirement)  
 The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere from **S2.029 through S2.031, and S2.038 through S2.042, combined**, the following pollutants in excess of the following specified limits:
  - a. The discharge of **PM** (particulate matter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - b. The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - c. The discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - d. The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.23 tons** per year.
  - e. The opacity from **S2.029 through S2.031, and S2.038 through S2.042, combined**, shall not equal or exceed **20 percent**.



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**Section V. Specific Operating Conditions (continued)**

**G. Emission Units S2.029 through S2.031, and S2.038 through S2.042 (continued)**

4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*)

The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.

- a. Monitor and record the throughput for **S2.029 through S2.031, and S2.038 through S2.042, combined**, on a daily basis.
- b. The **dust collector (DC-002)** must be operating any time **S2.029 through S2.031, and S2.038 through S2.042** are operating.
- c. Monitor and record the times at which operations start and stop as well as the total daily hours of operation for **S2.029 through S2.031, and S2.038 through S2.042**.
- d. Record the corresponding average hourly throughput rate in tons per hour. The average hourly throughput rate shall be determined from the total daily throughput and the total daily hours of operation.
- e. Monitor and record the total yearly throughput rate in tons per year. The annual throughput shall be determined at the end of each month as the sum of the monthly throughput rates for the year for all previous months of that year.
- f. Monitor and record the total yearly hours of operation per year. The annual hours of operation shall be determined at the end of each month as the sum of the monthly hours of operation for all previous months of that year.
- g. Conduct and record an observation of visible emissions (excluding water vapor) on the dust collector controlling **S2.029 through S2.031, and S2.038 through S2.042** on a **monthly** basis while operating. The observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented to their back. If visible emissions are observed and exceed the applicable opacity standard, the Permittee shall take immediate corrective action. The Permittee shall maintain in a contemporaneous log the following recordkeeping: the calendar date of any required monitoring, results of the monthly observation of visible emissions, and any corrective actions taken.
- h. Inspect the dust collector installed on **S2.029 through S2.031, and S2.038 through S2.042** in accordance with the manufacturer's operation and maintenance manual and record the results (e.g. the condition of the filter fabric) and any corrective actions taken.

5. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)

**S2.029 through S2.031, and S2.038 through S2.042** are subject to the requirements in **Section V.J - National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources** of this permit.





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**Section V. Specific Operating Conditions (continued)**

H. System 8 - Reserved



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Section V. Specific Operating Conditions (continued)

I. Emission Units S2.034 and S2.043

System 9 - Ingot Cutoff Saw		Location UTM (Zone 11, NAD 83)	
		m North	m East
S2.034	Ingot Cutoff Saw	4,342,393	263,617
S2.043	8" Porter Cable Grinder	4,342,393	263,617

1. Air Pollution Control Equipment (NAC 445B.346(1)) (Federally Enforceable SIP Requirement)
  - a. Emissions from **S2.034 and S2.043, combined**, will be controlled by a **dust collector (DC-005)**.
  - b. Descriptive Stack Parameters  
 Stack Height: 25 feet  
 Stack Diameter: 3 feet  
 Stack Temperature: 60°F  
 Exhaust Flow: 10,733 dry standard cubic feet per minute (dscfm)
  
2. Operating Parameters (NAC 445B.346(1)) (Federally Enforceable SIP Requirement)
  - a. The maximum allowable throughput rate for **S2.034 and S2.043, combined**, shall not exceed **2.14 tons of metal alloy** per any one-hour period, nor more than **6,242.0 tons** per year.
  - b. Hours
    - (1) **S2.034 and S2.043, each**, may operate a total of **19.5 hours** per day.
    - (2) **S2.034 and S2.043, each**, may operate a total of **7,117.5 hours** per year.
    - (3) **S2.034 and S2.043, each**, may operate from **4:00 AM to 11:30 PM Monday**.
  
3. Emission Limits (NAC 445B.305, NAC 445B.346(1), NAC 445B. 22017) (Federally Enforceable SIP Requirement)  
 The Permittee, upon issuance of this operating permit, shall not discharge or cause the discharge into the atmosphere from **S2.034 and S2.043, combined**, the following pollutants in excess of the following specified limits:
  - a. The discharge of **PM** (particulate matter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - b. The discharge of **PM<sub>10</sub>** (particulate matter less than or equal to 10 microns in diameter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - c. The discharge of **PM<sub>2.5</sub>** (particulate matter less than or equal to 2.5 microns in diameter) to the atmosphere shall not exceed **0.18 pounds** per hour, nor more than **0.65 tons** per year.
  - d. The discharge of **HAPs** (hazardous air pollutants) to the atmosphere shall not exceed than **0.27 tons** per year.
  - e. The opacity from **S2.034 and S2.043, combined**, shall not equal or exceed **20 percent**.
  
4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (Federally Enforceable SIP Requirement)  
 The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.
  - a. Monitor and record the throughput for **S2.034 and S2.043, combined**, on a daily basis.
  - b. Monitor and record the times at which operations start and stop as well as the total daily hours of operation for **S2.034 and S2.043**.
  - c. Record the corresponding average hourly throughput rate in tons per hour. The average hourly throughput rate shall be determined from the total daily throughput and the total daily hours of operation.
  - d. Monitor and record the total yearly throughput rate in tons per year. The annual throughput shall be determined at the end of each month as the sum of the monthly throughput rates for the year for all previous months of that year.
  - e. Monitor and record the total yearly hours of operation per year. The annual hours of operation shall be determined at the end of each month as the sum of the monthly hours of operation for all previous months of that year.





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Section V. Specific Operating Conditions (continued)

I. Emission Units S2.034 and S2.043 (continued)

4. Monitoring, Recordkeeping, and Reporting (NAC 445B.346(2)) (*Federally Enforceable SIP Requirement*) (*continued*)  
The Permittee, upon the issuance of this operating permit, shall maintain, in a contemporaneous log, the monitoring and recordkeeping specified in this section. All records in the log must be identified with the calendar date of the record. All specified records shall be entered into the log at the end of the shift, end of the day of operation, or the end of the final day of operation for the month, as appropriate.
  - f. Conduct and record an observation of visible emissions (excluding water vapor) on the dust collector controlling S2.034 and S2.043 on a **monthly** basis while operating. The observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented to their back. If visible emissions are observed and exceed the applicable opacity standard, the Permittee shall take immediate corrective action. The Permittee shall maintain in a contemporaneous log the following recordkeeping: the calendar date of any required monitoring, results of the monthly observation of visible emissions, and any corrective actions taken.
  - g. Inspect the dust collector installed on S2.034 and S2.043 in accordance with the manufacturer's operation and maintenance manual and record the results (e.g. the condition of the filter fabric) and any corrective actions taken.
5. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)  
S2.034 and S2.043 are subject to the requirements in Section V.J Specific Operating Conditions - National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources of this permit.



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Section V. Specific Operating Conditions (continued)

J. National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources: System 1 (S2.001), System 2 (S2.002 through S2.005), System 3 (S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010), System 4 (S2.011 through S2.019, and S2.033), System 5 (S2.020 through S2.027, and S2.037), System 6 (S2.028), System 7 (S2.029 through S2.031, and S2.038 through S2.042), and System 9 (S2.034 and S2.043)

1. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*)  
National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources
  - a. Affected Facilities (40 CFR 63.10880)
    - (1) If you own or operate an existing affected source, you must determine the initial applicability of the requirements of this subpart to a small foundry or a large foundry based on your facility's metal melt production for calendar year 2008. If the metal melt production for calendar year 2008 is 20,000 tons or less, your area source is a small foundry. If your metal melt production for calendar year 2008 is greater than 20,000 tons, your area source is a large foundry. You must submit a written notification to the Administrator that identifies your area source as a small foundry or a large foundry no later than January 2, 2009. (40 CFR 63.10880(f))
    - (2) If you own or operate a new affected source, you must determine the initial applicability of the requirements of this subpart to a small foundry or a large foundry based on your facility's annual metal melting capacity at startup. If the annual metal melting capacity is 10,000 tons or less, your area source is a small foundry. If the annual metal melting capacity is greater than 10,000 tons, your area source is a large foundry. You must submit a written notification to the Administrator that identifies your area source as a small foundry or a large foundry no later than 120 days after startup. (40 CFR 63.10880(g))
  - b. Compliance Dates (40 CFR 63.10881)
    - (1) Following the initial determination for an existing affected source required in **J.1.a.(1)** (40 CFR 63.10880(d))
      - (a) Beginning January 1, 2010, if the annual metal melt production of your small foundry exceeds 20,000 tons during the preceding calendar year, you must submit a notification of foundry reclassification to the Administrator within 30 days and comply with the requirements in paragraphs **J.1.b.(1)(a)(i)** of this section, as applicable. (40 CFR 63.10881(d)(1))
        - (i) If your small foundry has never been classified as a large foundry, you must comply with the requirements for a large foundry no later than 2 years after the date of your foundry's notification that the annual metal melt production exceeded 20,000 tons. (40 CFR 63.10881(d)(1)(i))
        - (ii) If your small foundry had previously been classified as a large foundry, you must comply with the requirements for a large foundry no later than the date of your foundry's most recent notification that the annual metal melt production exceeded 20,000 tons. (40 CFR 63.10881(d)(1)(ii))
      - (2) Following the initial determination for a new affected source required in **J.1.a.(2)** (40 CFR 63.10880(e))
        - (a) If you increase the annual metal melt capacity of your small foundry to exceed 10,000 tons, you must submit a notification of reclassification to the Administrator within 30 days and comply with the requirements for a large foundry no later than the startup date for the new equipment, if applicable, or the date of issuance for your revised State or Federal operating permit. (40 CFR 63.10880(e)(1))





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- J. National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources: System 1 (S2.001), System 2 (S2.002 through S2.005), System 3 (S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010), System 4 (S2.011 through S2.019, and S2.033), System 5 (S2.020 through S2.027, and S2.037), System 6 (S2.028), System 7 (S2.029 through S2.031, and S2.038 through S2.042), and System 9 (S2.034 and S2.043) (continued)
1. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*) (continued)  
National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources
- c. Management Practices for Binder Formulations (40 CFR 63.10886)
- (1) For each furfuryl alcohol warm box mold or core making line at a new or existing iron and steel foundry, you must use a binder chemical formulation that does not use methanol as a specific ingredient of the catalyst formulation. This requirement does not apply to the resin portion of the binder system.
- d. Management Practices and Compliance Requirements (40 CFR 63.10890)
- (1) You must submit an initial notification of applicability according to §63.9(b)(2). (40 CFR 63.10890(b))
- (2) You must submit a notification of compliance status according to §63.9(h)(2)(i). You must send the notification of compliance status before the close of business on the 30th day after the applicable compliance date specified in **J.I.b**. The notification must include the following compliance certifications, as applicable: “This facility has prepared, and will operate by, written material specifications for metallic scrap according to §63.10885(a)(1)” and/or “This facility has prepared, and will operate by, written material specifications for general iron and steel scrap according to §63.10885(a)(2).” (40 CFR 63.10890(c)(3))
- (3) As required by §63.10(b)(1), you must maintain files of all information (including all reports and notifications) for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent 2 years of data shall be retained on site. The remaining 3 years of data may be retained off site. Such files may be maintained on microfilm, on a computer, on computer floppy disks, on magnetic tape disks, or on microfiche. Any records required to be maintained by this part that are submitted electronically via the EPA's Compliance and Emissions Data Reporting Interface (CEDRI) may be maintained in electronic format. This ability to maintain electronic copies does not affect the requirement for facilities to make records, data, and reports available upon request to a delegated air agency or the EPA as part of an on-site compliance evaluation. (40 CFR 63.10890(d))
- (4) You must maintain records of the information specified in paragraphs (a) through (d) of this section according to the requirements in §63.10(b)(1). (40 CFR 63.10890(e))
- (a) Records supporting your initial notification of applicability and your notification of compliance status according to §63.10(b)(2)(xiv). (40 CFR 63.10890e(1))
- (b) Records to document use of binder chemical formulation that does not contain methanol as a specific ingredient of the catalyst formulation for each furfuryl alcohol warm box mold or core making line as required by **J.I.c**. These records must be the Material Safety Data Sheet (provided that it contains appropriate information), a certified product data sheet, or a manufacturer's hazardous air pollutant data sheet. (40 CFR 63.10890e(5))
- (c) Records of the annual quantity and composition of each HAP-containing chemical binder or coating material used to make molds and cores. These records must be copies of purchasing records, Material Safety Data Sheets, or other documentation that provides information on the binder or coating materials used. (40 CFR 63.10890e(6))
- (d) Records of metal melt production for each calendar year. (40 CFR 63.10890e(7))



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**Section V. Specific Operating Conditions (continued)**

- J. National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources: System 1 (S2.001), System 2 (S2.002 through S2.005), System 3 (S2.006, S2.007, S2.008, S2.009, S2.035, S2.036, and S2.010), System 4 (S2.011 through S2.019, and S2.033), System 5 (S2.020 through S2.027, and S2.037), System 6 (S2.028), System 7 (S2.029 through S2.031, and S2.038 through S2.042), and System 9 (S2.034 and S2.043) (continued)
- I. Federal Requirements (NAC 445B.346(2), NAC 445B.252(1)) (*Federally Enforceable SIP Requirement*) (continued)  
National Emission Standards for Hazardous Air Pollutants Area Source Standards – 40 CFR Part 63, Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources
- d. Management Practices and Compliance Requirements (40 CFR 63.10890) (continued)
- (5) You must submit a written notification to the Administrator of the initial classification of your facility as a small foundry as required in **J.1.a(2)** and **J.1.a(2)**, as applicable, and for any subsequent reclassification as required in **J.1.b(1a)** or **J.1.b(2)**, as applicable. (40 CFR 63.10890(g))
- (6) Following the initial determination for an existing affected source as a small foundry, if the annual metal melt production exceeds 20,000 tons during the preceding year, you must comply with the requirements for large foundries by the applicable dates in **J.1.b.(2)(i)** or **J.1.b.(2)(ii)**. Following the initial determination for a new affected source as a small foundry, if you increase the annual metal melt capacity to exceed 10,000 tons, you must comply with the requirements for a large foundry by the applicable dates in **J.1.b.(2)**. (40 CFR 63.10890(h)) (7) At all times, the Permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. (40 CFR 63.10890(i))
- (8) The Permittee must comply with the following requirements of the general provisions in subpart A of this part: 40 CFR 40 CFR 63.1 through 63.5; 40 CFR 63.6(a), (b), and (c); 40 CFR 63.9; 40 CFR 63.10(a), (b)(1), (b)(2)(xiv), (b)(3), (d)(1) and (4), and (f); and 40 CFR 40 CFR 63.13 through 63.16. Requirements of the general provisions not cited in the preceding sentence do not apply to the owner or operator of a new or existing affected source that is classified as a small foundry. (40 CFR 63.10890(j))





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**Section VI. Emission Caps**

A. Not Applicable

**\*\*\*\*End of Emission Caps\*\*\*\***



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**Section VII. Surface Area Disturbance Conditions**

The surface area disturbance for PCC Structurals is less than 5 acres.

- A. Fugitive Dust (NAC 445B.22037) (*Federally Enforceable SIP Requirement*)
1. No person may cause or permit the handling, transporting or storing of any material in a manner which allows or may allow controllable particulate matter to become airborne.
  2. Except as otherwise provided in subsection 4, no person may cause or permit the construction, repair, demolition, or use of unpaved or untreated areas without first putting into effect an ongoing program using the best practical methods to prevent particulate matter from becoming airborne. As used in this subsection, "best practical methods" includes, but is not limited to, paving, chemical stabilization, watering, phased construction and revegetation.
  3. Except as otherwise provided in subsection 4, no person may disturb or cover 5 acres or more of land or its topsoil until he has obtained an operating permit for surface area disturbance to clear, excavate, or level the land or to deposit any foreign material to fill or cover the land.
  4. The provisions of subsections 2 and 3 do not apply to:
    - a. Agricultural activities occurring on agricultural land; or
    - b. Surface disturbances authorized by a permit issued pursuant to NRS 519A.180 which occur on land which is not less than 5 acres or more than 20 acres.

**\*\*\*\*End of Surface Area Disturbance Conditions\*\*\*\***





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**Section VIII. Schedules of Compliance**

A. Not Applicable

**\*\*\*\*End of Schedule of Compliance \*\*\*\***



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Section IX. Amendments

This permit:

1. Is non-transferable. (NAC 445B.287.3) (Federally Enforceable SIP Requirement)
2. Will be posted conspicuously at or near the stationary source. (NAC 445B.318.5) (Federally Enforceable SIP Requirement)
3. Will expire and be subject to renewal five (5) years from: March 18, 2018  
(NAC 445B.315) (Federally Enforceable SIP Requirement)
4. A completed application for renewal of an operating permit must be submitted to the director on the form provided by him with the appropriate fee at least 70 calendar days before the expiration date of this operating permit. (NAC 445B.3473.2) (Federally Enforceable SIP Requirement)
5. Any person aggrieved by a final decision of the Department may, not later than 10 days after notice of the action of the Department, appeal the decision by filing a request for a hearing before the Commission on a form 3\* with the State Environmental Commission, 901 South Stewart Street, Suite 4001, Carson City, Nevada 89701-5249.  
\*(See adopting agency for form.) (NAC 445B.890) (State Only Requirement)

THIS PERMIT EXPIRES ON: March 18, 2023

Signature:

Issued by: Ashley Taylor, P.E.  
Supervisor, Permitting Branch  
Bureau of Air Pollution Control

Phone: (775) 687- 9330 Date: June 22, 2022

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## Class II Insignificant Activities List

Appended to Permit #AP3324-1253.03

Emission Unit #	Emission Unit Description
IA1.001	Cleaver Brooks, Clear Fire, Gas-fired Boiler (30hp)
IA1.002	Salt bath heater

END OF THE REPORT



# Exhibit B

Photographs of Bader  
Grinders 1 and 2 with  
Dust Collection  
Installed

Bader Grinders with dust collection installed

