



INDOOR AIR QUALITY ASSESSMENT DURING
CONSTRUCTION
September, 2014

WINCHESTER HIGH SCHOOL
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1. EXECUTIVE SUMMARY

BACKGROUND

Consigli retained Cashins & Associates, Inc., to perform an indoor air quality (IAQ) assessment at areas adjacent to Phase I of the project at the Winchester High School in Winchester, Massachusetts. This testing was conducted in order to determine whether various IAQ parameters were in compliance with the project's Indoor Air Quality Management Plan.

SCOPE OF WORK

On September 19, 2014, a Senior Indoor Air Quality Consultant from Cashins & Associates performed air sampling as required by the Indoor Air Quality Management Plan developed by Cashins & Associates.

Measurements were taken for the following:

- Carbon Dioxide
- Temperature
- Relative Humidity
- Carbon Monoxide
- Volatile Organic Compounds (VOCs)
- Dust

FINDINGS

Real-time readings for CO, VOCs, and dust were all below upper limits set forth in the IAQ Management Plan.



2. INTRODUCTION

Cashins & Associates, Inc. was retained by Consigli to provide professional industrial hygiene consulting services. Our scope of work consisted of measuring various basic indoor air quality parameters during construction activities at Winchester High School in Winchester, Massachusetts. This assessment took place on September 19, 2014, and focused on areas adjacent to Phase I of the project.

3. INDOOR AIR QUALITY PARAMETERS

The following is a breakdown of upper limits related to indoor air quality as stipulated in section 01 81 19 of the Project Specification:

Analyte	Upper Limit
Airborne dust	150 µg/m ³ (Occupied), 500 µg/m ³ (Work Area)
Volatile Organic Compounds (VOCs)	5 ppm (5,000 ppb)
Carbon Monoxide (CO)	9 ppm

4. METHODOLOGIES

A TSI Q-Track indoor air quality meter was used to measure carbon dioxide, carbon monoxide, temperature, and relative humidity in the space. The range of measurements obtained is reported in Table 1.

A RAE Instruments part per billion photo-ionization detector (PID) was utilized to screen the school building for the presence of TVOC. The PID is a screening tool that provides information as to total volatile organic compound loading in the space. The instrument does not provide information pertaining to which specific compounds are present in the air.

Dust concentrations were measured using a MIE pDR-1000AN passive air sampler. This real-time aerosol monitor measures both respirable and thoracic fractions, with optimal responses to particles in the 0.1-10 micron size range. The monitor was zeroed on June 19, 2014 prior to the monitoring event by using a hand-inflatable “zero air” pouch in conjunction with an inlet filter cartridge.

5. FINDINGS

5.1 Findings: Basic IAQ Parameters

We have listed in Tables 1 through 3 the results of the real-time air sampling. Three rounds of sampling were conducted at various times of the day in order to gain a more representative data set.

Table 1: Real-time Air Quality Readings

<i>Location</i>	<i>CO₂</i> <i>(ppm)</i>	<i>CO</i> <i>(ppm)</i>	<i>TVOC</i> <i>(ppb)</i>	<i>Dust</i> <i>(µg/m³)</i>
1st floor				
Exit 34	646	<0.1	56	21
@ A101	435	<0.1	13	4
@ WOMEN'S Room	432	<0.1	5	55
@ B102	514	< 0.1	21	18
@ Photography	540	<0.1	40	42
@ Cafeteria	920	<0.1	89	14
@ Library	1229	<0.1	157	17
2nd floor				
@B209	618	<0.1	39	10
@C212	674	<0.1	48	7
@C210	641	<0.1	36	8
@C207	597	<0.1	23	6
@C201	688	<0.1	38	13
@C204	714	<0.1	4	23
@B210	607	<0.1	32	1
@B207	921	<0.1	61	17
@B201	752	<0.1	47	6
@A210	603	<0.1	31	3
@A211	843	<0.1	46	33
@A202	903	<0.1	73	2
@A202	751	<0.1	41	<1
Stair landing	691	<0.1	23	19
3rd Floor				
@A301	540	<0.1	63	2
@ Science Lecture	556	<0.1	38	3
@A306	533	<0.1	23	8
@B301	608	<0.1	77	3
B wing hall @ TCP	596	<0.1	60	3
@C301	635	<0.1	22	<1
C wing hall @ work	790	<0.1	42	<1
1st floor E wing				
@ music suite construction	450	<0.1	11	72
Band room corridor	554	<0.1	21	18
Band room	584	<0.1	33	<1
Hall near WOMEN'S locker	362	<0.1	44	<1
@ Men's locker room	347	<0.1	15	<1



Table 1: Real-time Air Quality Readings

<i>Location</i>	<i>CO₂</i> <i>(ppm)</i>	<i>CO</i> <i>(ppm)</i>	<i>TVOC</i> <i>(ppb)</i>	<i>Dust</i> <i>(µg/m³)</i>
@ Boiler room	334	<0.1	33	3

6. DISCUSSION

Real-time readings for CO, VOCs, and dust were all below upper limits set forth in the IAQ Management Plan.

No significant construction-related odors were detected at the time of this assessment.

Indoor air quality will be monitored on a regular basis by Cashins & Associates throughout this project in order to ensure that concentrations of various airborne contaminants remain at acceptable levels.

Please call if you have any questions or if we can be of further assistance.

Sincerely,
Cashins & Associates, Inc.



Zachary Keefe, CIE
Senior Indoor Air Quality Consultant