

INITIAL REPORT

**INITIAL INDOOR AIR QUALITY EVALUATION
BIDDEFORD HIGH SCHOOL
BIDDEFORD, MAINE**

ON-SITE VISIT CONDUCTED JANUARY 27, 2011

TURNER BUILDING SCIENCE & DESIGN, LLC

TURNER

GROUP

MECHANICAL ENGINEERS • BUILDING SCIENTISTS • IAQ CONSULTANTS

February 17, 2011

Ms. Sarah-Jane Poli
Superintendent
Biddeford School Department
205 Main Street, P.O. Box 205
Biddeford, ME 04005

Via Email: sjpoli@biddschools.org
pradding@biddefordmaine.org

SUBJECT: Initial Report on Forensic Indoor Air Quality Evaluation
Regarding Expressed Occupant Concerns
Related to Certain Areas of Biddeford High School
During Construction Activity (TBS Project #S0967)

Dear Ms. Poli:

Background: In accordance with our approved Scope of Services, dated January 24, 2011, we are pleased to offer this initial report concerning results of our initial Scope of Services as defined in the enclosed Appendix C. This scope was proposed based on the District's expressed limited amount of funds available for initial services, and our very limited understanding of building related concerns at the time the proposal was requested. Specifically, we understood that in certain areas, a small number of occupants have been reported to have some type of reaction to alleged exposure during the construction phase of a renovation project.

The specific focus of this proposed effort was to conduct:

- A) A review of consultant's reports concerning the indoor air quality at the High School since renovation activities have begun.
- B) Interview (one day) those with first-hand knowledge as to what type of occupant symptoms have been reported and when they occurred.
- C) Review construction containment plans as they exist for various phases of construction, and discuss how this information has been, and will be, communicated to staff and parents.

Our recommendations made herein are based on our general knowledge concerning indoor air quality (IAQ), HVAC systems, building science, and our historical experience conducting IAQ and HVAC diagnostics in buildings with expressed occupant concerns.

In addition, we have also drawn on our rather extensive experience regarding the design and monitoring of construction containment during renovation activities, in or adjacent to, occupied buildings.

The intent of these services is to assist the District with determining the need for any short or long-term evaluation, or management strategies to minimize current occupant concerns during a rather extensive, complicated, construction and renovation project. The enclosed report is of a technical nature; therefore, the reader will need to have some technical knowledge of the facility to properly evaluate the recommendations made herein.

We are pleased to serve as professional consultants to the Biddeford School District and look forward to the opportunity to continue to assist the District with resolution of occupant concerns. Please contact us if there are any questions on subjects presented here that need further clarification. You can reach William Turner at (800) 439-3446, ext. 11, or Steve Caulfield at ext. 14 in our Harrison, Maine office.

Sincerely,

TURNER BUILDING SCIENCE & DESIGN, LLC



William A. Turner, P.E.
President/CEO



Steven M. Caulfield, P.E., C.I.H.
Senior Vice President

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Attachments



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1.0 SUMMARY

The Biddeford School Department retained Turner Building Science & Design, LLC (TBS), to review consultant's reports and make recommendations concerning the indoor air quality at the High School since renovation activities have begun. The concerns appear to stem from historic and ongoing assertions of water leakage, mold contamination, and exposure to construction dust. In accordance with our approved scope, TBS completed an initial review of occupant concerns regarding water leakage, mold contamination, and construction activities reported to be associated with the current renovation of the Biddeford High School. Occupants were interviewed specifically prior to our review of documents, such that we would have no preconceived ideas regarding the situation they might report. The confidential interviews (see Standard Form & Summary Appendix B) were designed to simply catalog the type and timing of reported symptoms and general reported location that the symptoms were experienced in. From our review of eighteen (18) documents which have been provided (Items Reviewed Listed in Appendix A), the results of twelve (12) interviews during one day, and a review of the contractor's construction containment documents, the following general observations and specific recommendations are offered.

1.1 General Observations and Discussion

- 1) Building History: The cinder block wall, wood shelving, and tiled floor building appears to have a long and ongoing history of moisture intrusion in multiple locations. A very limited visual inspection of the school supports District, staff, and student reports of historic and ongoing moisture intrusion in several areas. Moisture is a concern in occupied buildings because of the potential for promoting active mold growth. It is reasonable to assume that the renovations are intended to eventually eliminate these historic water problems. Management of water leaks in the short-term, until renovations correct them remains a concern.
- 2) Historic Occupant Concerns: Prior to construction activities commencing, and after the commencement of activities, there is evidence of concerns regarding effective cleaning and HVAC (unit ventilator, radiant heater) maintenance procedures. There are occupant reports of exacerbation of various health symptoms, primarily upper respiratory symptoms, and occasional lower respiratory. Also prior to construction, according to reported school records, there are at least five (5) reports of an occupant experiencing an allergic reaction on school grounds with at least one being a reported severe allergic reaction resulting in administration of an EpiPen. TBS is currently not under contract to evaluate the medical accuracy of the reported allergic reactions, nor has there been a review of occupant medical records.



- 3) Occupant Concerns at the Commencement of Construction: Interviewed occupants reported various health symptoms after the commencement of construction activities that have recently subsided somewhat for a few individuals. In addition, it is reported by the District there are at least four (4) reports of allergic reactions by two occupants (2 per occupant) after the start of construction. One of the occupants experienced pre-building construction reactions as noted above. As noted previously, TBS is currently not under contract to evaluate the medical accuracy of the reported allergic reactions, nor has there been a review of occupant medical records.
- 4) Construction Containment: Some occupant reports and consultant reports indicate that various types of construction containment procedures that may have been employed, on various occasions, have not been effective at preventing (stopping) migration of construction related materials into occupied areas (odors and dusts).
- 5) Initial Review of Construction Containment Documents: Review of phasing plans and written containment materials that have been provided, do not indicate that the containment is being continuously pressure monitored or well documented, or that the intent is to comply with any specific containment specification. Note that although there is no regulatory standard for renovation projects, TBS endorses the principles and practices outlined in “Indoor Air Quality Guidelines for Occupied Buildings Under Construction”¹ developed by the Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA). This guideline explains pressure control and occupant communication needs during renovation. These guidelines are also referenced by US EPA in their IAQ Design Tools for Schools². These guidelines do not specifically call for continuous pressure monitoring; however, TBS believes this to be an appropriate best management practice (BMP) given the historic situation with this school and our experience with other school renovation projects with occupied structures.
- 6) Consultant Testing Results: Consultant testing to date generally has:
 - a. Hazards: Revealed no confirmed exposures to what would be generally considered unacceptable levels of hazardous, regulated materials.

¹ The SMACNA document is available at http://www.smacna.org/bookstore/index.cfm?fuseaction=search_results&keyword=IAQ%20Guidelines%20for%20Occupied%20Buildings%20Under%20Construction%2C%202nd%20Edition

² USEPA’s IAQ Design Tools for Schools is available at <http://www.epa.gov/iaq/schooldesign>. EPA’s reference to the SMACNA guidelines can be found at <http://www.epa.gov/iaq/schooldesign/construction.html>.

- b. Molds: Confirmed that when tested, some areas have occasional marginally elevated mold levels (typically related to penicillium/aspergillus molds), likely related to past and/or current water damage. Based on the durable moisture resistant materials the school is constructed from (very little sheetrock), the low levels of the molds identified are hypothesized to have grown on dust deposits, wood materials, or ceiling tiles. The molds typically identified are similar to molds frequently found outdoors in the normal outdoor environment. The levels are not high, so the relative risk to normal healthy individuals is low. However, any suspect reservoirs that could lead to exposures should be promptly identified and carefully managed until they can be removed under containment procedures.

- c. Ventilation: Carbon Dioxide survey data (as an indicator of dilution of occupants exhaled breath) revealed some areas with sometimes marginal or poor ventilation. Note: Extremely elevated indoor levels that have been known to occur in some school districts that would approach the OSHA standard of 5,000 PPM have not been reported. TBS has yet to evaluate the ventilation system currently operating within the facility. We understand that some areas have no mechanical ventilation.

- d. Particles: Based on real-time particle counts of breathable dusts, one large set of particle test data revealed some periods which would be considered unusually elevated levels of breathable dusts and dirt in multiple locations. The levels of dust measured during that particular data collection period would typically be associated with increased occupant complaints of poor indoor air quality. Typically, a thorough cleaning and elimination of the source of the high levels of dust generation would reduce occupant complaints. In this particular case, dust from construction related activities is suspected as the source.

7) Consultant Recommendations: Have included:

- a. Recommendations to change and improve the District's cleaning methods.

- b. Recommendations to maintain containment isolation to prevent migration of fugitive dusts and odors to occupants.

- c. Recommendations to evaluate the building for the presence of mold reservoirs and to properly manage (remove and prevent) mold reservoirs if found.



1.2 Specific TBS Recommendations in General Order of Priority

Based on our findings and professional opinion, in accordance with our scope of services, we recommend that the District proceed with approving the following Scope of Additional Services to be conducted by TBS regarding Biddeford High School. Once authorization is received, we will develop specific task items and a defined not-to-exceed fee without authorization budget.

- 1) Conduct a Critical Review and Evaluation of Construction Containment Plans Including Vehicle/Equipment Emission Control: This construction containment plan review will include review of a plan to implement continuous pressure monitoring with digital or strip chart recording of all current ongoing containment areas. We will also propose periodic, independent audits of pressure data by TBS. The review should also include a review of planned isolation of all demolition, construction areas, and contractors intended means of creating isolation and pressure manipulation during each planned phase of demolition or construction. Vehicle/equipment emission control reviews will include evaluation of provisions for reducing entrainment of exhaust fumes into the occupied areas. The review will also include the current structure for reporting performance results to the Owner and recommendations for improvement.
- 2) Conduct a Critical Review of Current Ventilation Systems that are in use in the Existing Facility: This review will include current air filters in use, a review of the condition of outdoor air supply systems, and current building exhaust planned for the duration of the renovation project. Operation of the existing HVAC systems, to the extent that they may exist, or new ones brought on line, should be evaluated for their likely positive or potentially negative impact on any containment plans of the contractor.
- 3) Conduct an Evaluation of the Presence of Mold Reservoirs in Specific Locations: There is some test data and occupant reported symptoms that suggest the possible existence of mold reservoirs in some areas. These include, but are not limited to, Rooms 7, 13, 14, 111, 113, 115, 116, 117, 203, 208, 212, 215/216, 222 and 223. While there may not be an immediate health risk based on available data, the recommended evaluation is intended to identify and limit potential health impacts during occupant activities or construction activities. Detailed visual observations and possibly testing should be conducted in these areas, or any others identified in further occupant interviews.
- 4) Conduct an Evaluation of Current District Fugitive Moisture Management Procedures and Methods (if One Exists): Based on occupant reports of ongoing leaks and moisture intrusion, and very limited communications, we are not aware of any written plan or protocol that is in place to deal with ongoing water intrusion of various types.



- 5) Effective Cleaning Review: It is our understanding that dust mops are currently still used within the school. Given the history of this facility and current occupant concerns, we strongly recommend, as an additional best management practice that the general use of dust mops be immediately discontinued. Dust mops (unless very carefully treated with chemical bonding agents and used without shaking) typically generate large clouds of breathable dust that subsequently resettle on surfaces after they have been used. The only exception to this is when carefully treated mops are used on high quality wood athletic floors. Only cleaning systems that do not generate dust and that capture and remove dirt should be utilized as part of a normal cleaning program. This change should be implemented as soon as possible.

- 6) Continued Occupant Interviewing of Staff: We recommend that in addition to the District setting-up communications channels as recommended in the referenced SMACNA IAQ Guideline, that the District schedule additional (suggested every two months) interviewing periods with TBS for any staff who wish to report ongoing health, odor, or dust concerns related to current occupancy of the facility.

- 7) As Feasible, Investigate Reports of Past Anaphylaxis Allergic Reactions: During interviews there were reports of at least two individuals experiencing potentially life threatening anaphylaxis allergic reactions related to occupancy of the building at various times. It is our understanding that this type of acute immediate reaction can be clearly documented by an emergency department of a hospital, and that without proper medical interpretation, that it can be confused with a less critical, rarely-life-threatening, similar allergic reaction and vice versa. In order to determine if an anaphylaxis reaction did occur and to identify the trigger allergen, mandatory professional evaluation of the individual by a board certified allergist is required. Once the anaphylaxis reaction is confirmed and the trigger identified, the areas where the reactions occurred should be carefully evaluated for the presence of the trigger. As feasible, the medical facts related to these situations should be obtained, in confidence if needed, and any potential issues in the facility, if present, should be carefully evaluated and corrected.

1.3 Limitations of TBS Review

The review of received materials, data collection, analysis, conclusions, and recommendations contained within this report are based on a brief and limited review of what are believed to be materials generated by qualified professionals, and generally representative of the current building situation. We have made recommendations to undertake specific additional evaluations or actions based on the information available to us at this time. Once these additional evaluations are conducted and results evaluated, further short and long-term recommendations can be developed if warranted. Our current



limited analysis is based on what is believed to be representative test data for the time of year and reported operation of the HVAC systems by other consultants and District personnel, and information gained in limited occupant interviews. We believe all of the test data to be accurate and representative of the specific conditions encountered within the facility during the various evaluation periods; however, it is impossible to know if it is a good representation of all of the various zones or areas within the facility.



Appendix A

Listing of Items Reviewed

	Source	Subject	Dated
1	Air Quality Management Services, Inc.	Summary Report	March 18, 2010
2	Air Quality Management Services, Inc.	Indoor Air Quality Assessment	April 7 th and April 10 th , 2009
3	Air Quality Management Services, Inc.	Bio-Remediation Assessment	April 15, 2010
4	Air Quality Management Services, Inc.	Indoor Air Quality Evaluation	September 23, 2010
5	Air Quality Management Services, Inc.	Indoor Air Quality Evaluation	October 29, 2010
6	Air Quality Management Services, Inc.	Indoor Air Quality Evaluation	November 5, 2010
7	Air Quality Management Services, Inc.	Indoor Air Quality Evaluation	November 29, 2010
8	Air Quality Management Services, Inc.	Indoor Air Quality Evaluation	December 1, 2010
9	Air Quality Management Services, Inc.	Indoor Air Quality Evaluation	December 8 th - 10 th , 2010
10	Email from Nick Ferrela (AQM) and Philip Radding (Biddeford) to Sarah-Jane Poli (Biddeford)		December 13, 2010
11	Letter from Larry Mare (State of Maine) to Sarah-Jane Poli (Biddeford) regarding site visit.		December 14, 2010
12	Health of BHS Staff Survey		December 3, 2010
13	Letter to Ledgewood Construction Co., Inc. from the Occupational Safety & Health Administration (OSHA)		December 1, 2010
14	Letter to William Coffin (OSHA) from Peter Benard (Ledgewood)		December 7, 2010
15	Memo to Peter Bernard (Ledgewood) from Mark Coleman, Environmental Safety & Hygiene Associates, Inc. (ESHA)		December 7, 2010
16	Letter to Peter Bernard (Ledgewood) from ESHA		December 22, 2010
17	Letter to Randy Geoffroy (AQM) from Mary Unangst, Galson Laboratories		
18	Environmental Safety & Hygiene Associates, Inc.	Indoor Environmental Quality Assessment	December 22, 2010

Appendix B

TBS Standard Interviewing Form &
Summary of Interviews

In response to concerns about the quality of indoor air and comfort provided, we are collecting information on individual experiences to better understand conditions in this building under our review.

1) Floor and Location ^{1A} ____ - ^{1B} ____ - ^{1C} ____ Zone ^{1D} ____ Department ^{1E} _____
Floor Letter Number

2) We understand that you are here because you have current health or comfort concerns about the quality of indoor air currently provided in this building that you associate with being in this building?

Health ^{2A} Y / N , Comfort ^{2B} Y / N , Other ^{2C} _____

If comfort, too hot ^{2D} Y / N , too cold ^{2E} Y / N , too humid ^{2F} Y / N , too dry ^{2G} Y / N .

When? Time of day ^{2H} _____ am / pm. Time of year ^{2I} _____ Summer, Fall, Winter, Spring

3) Can you list the body area impacted by any symptoms or discomforts that you associate with being in this building: Upper respiratory (nose, throat, sinus) ^{3A} Y / N , Lower respiratory (chest tightness, bronchitis, asthma) ^{3B} Y / N , Irritation of the eyes ^{3C} Y / N , Irritation of the skin, ^{3D} Y / N ,

Do you wear contact lenses? ^{3E} Y / N

Other/more details: ^{3F} _____

4) When do these symptoms occur? ^{4A} _____ am / pm. When did they start? ^{4B} _____

5) Do they go away after leaving the building? ^{5A} Y / N , How long after, ^{5B} _____ hours

6) Do you associate the onset of these symptoms with any event in the building, any location in the building, or a change in the season/weather? ^{6A} _____

7) How long have you been experiencing these symptoms, ^{7A} _____ weeks / months / years

How long have you worked here ^{7B} _____ months / years

Has your location in the building changed over time? ^{7C} _____ Where did you work in the building before? floor and room location ____ - ____ - ____, zone _____, department _____

8) Have you reported any symptoms to a physician? ^{8A} Y / N . If so, what was their response? ^{8B} _____

9) Do you have any allergies that you are aware of? ^{9A} Y / N [Details: ^{9B} _____]

10) Can you briefly describe your work activities? ^{10A} _____

What percent of your time involves paper handling ^{10B} _____% chemicals ^{10C} _____

(Video Display Terminal) (Cathode Ray Tube) (Liquid Crystal Display)

11) Do you use a video display screen (VDT) ^{11A} Y / N : CRT ^{11B} Y / N or LCD ^{11C} Y / N ,

If so, for how many hours a day? ^{11D} _____, or a percent of your time ^{11E} _____%

12) Do you have any observations or comments about building conditions that might be relevant or might help explain your symptoms? ^{12A} _____

Thank you

TBS INTERVIEW SUMMARY 1-27-11, BIDDEFORD HIGH SCHOOL

The one-day of interviewing was conducted to begin to understand the type of health or comfort concerns that occupants reported that they felt could be related to building occupancy. We interviewed twelve (12) individuals who reported first hand knowledge of their experience with the building. We have no knowledge as to how these reported symptoms represent the overall population at the school, nor was this effort intended to be statistically representative of the school.

Cataloging of occupant's reported concerns included reports of:

Headaches, including migraines & some dizziness.

Reports of headaches increasing after construction began.

Upper Respiratory Health Symptoms including nose, throat, and sinus irritation and inflammation. Nose bleeds.

Lower Respiratory Health Symptoms including chest tightness, and worsening of asthma.

Concern for worsening of allergies.

Non-specific Health Effects related to strong odors and ongoing musty smells.

Concerns for visible dust deposits, especially after construction began.

Concerns for visible stains on ceiling tiles.

Concern for visible mold growth in multiple locations and black mold on ceilings.

Concerns for ongoing roof leaks.

Concerns for exhaust and propane odors after construction began.

Concerns for lack of ventilation and stuffiness, poor maintenance.

Concerns for paint peeling off cinder blocks.

Appendix C

Approved Initial Scope of Services

TURNER
GROUP

Initial Scope of Services

TURNER BUILDING SCIENCE & DESIGN, LLC

26 PINWOOD LANE, HARRISON, MAINE 04040-4334 TEL: 207-583-4571 FAX: 207-583-4572

www.turnerbuildingscience.com

January 11, 2011

Ms. Sarah-Jane Poli
Superintendent
Biddeford School Department
205 Main Street, P.O. Box 205
Biddeford, ME 04005

Via Email: sjpoli2biddschools.org
pradding@biddefordmaine.org

SUBJECT: *Draft Proposal for Forensic Indoor Air Quality Evaluation
Regarding Expressed Occupant Concerns
Related to Occupancy of Certain Areas of Biddeford High School
During Construction Activity*

Dear Ms. Poli:

BACKGROUND AND INITIAL SCOPE OF SERVICES

We understand that air testing for various parameters has been conducted within the High School since renovations were undertaken and that construction containment plans are reported to be in place. We understand that in certain areas, a small number of occupants have been reported to have some type of reaction to alleged exposure.

Per your request, Turner Building Science & Design, LLC (TBS) is pleased to offer this initial proposal to conduct:

- A) A review of consultants reports concerning the indoor air quality at the High School since renovation activities have begun.
- B) If access can be provided, we would like to interview those with first-hand knowledge as to what types of occupant symptoms have been reported and when they occurred. We would also like to tour the areas where concerns have been raised.
- C) Additionally, if construction containment plans exist for various phases of construction, we would like to review the plans and discuss how this information has been, and will be, communicated to staff and parents.

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From the results of the above information, we will develop and present a Scope of Services as warranted regarding any need for additional review, evaluation, or testing.

The current Scope of Services does not include recommendations or design of corrective measures, nor the surveying or testing for asbestos fibers or any other pollutants not identified in this proposal. We can perform additional evaluation, testing, design, or cost estimates, if requested and authorized, as part of an Additional Scope of Services if it appears warranted.

RESULTS

We will submit a draft written summary report in two (2) copies describing the results of our review and any recommendations for additional evaluation. We will attend meetings if requested.

FEE

Initial Fee: As we do not know the actual time that the review of materials and requested interviews will entail, we propose to bill on a time and materials basis with a not-to-exceed limit of \$2,900.00.

This fee assumes that reports will be provided in chronological order and hard copy, one (1) site visit will be made, interviews of individuals with first-hand knowledge of occupant concerns will be scheduled for us by others, and drawings of construction containment plans and reports that have been made to occupants regarding them will be made available. One (1) meeting to present the results of this initial work to others is included in the above fee.

Additional Services: Once results of the above scope are available, we will propose additional services and associated fees as warranted via addenda.

SCHEDULE TO ACCOMPLISH WORK AS DESCRIBED

These services will be provided by William A. Turner, P.E., Steven M. Caulfield, P.E., C.I.H., or other Turner Group staff or consultants, as needed. We are ready to begin these services as soon as verbal authorization and existing reports are received. Interviews may be scheduled soon after we have reviewed the reports.



CLIENT RESPONSIBILITIES

In order to conduct the report and go over containment plan reviews, occupant interviews, and any future observations, measurements, and analysis as outlined in the Scope of Services, we would need the following:

1. Availability of consultant reports and access for interviews.
2. If scope is expanded by addenda or an additional contract, authorization from the Owner (Client) for access to various areas such as equipment rooms, and the roof, and assistance from the Client's representative during periods of on-site work, including access to ladders necessary for equipment access.
3. Identification of all areas within the building known to contain asbestos-containing materials, or any other material that would be hazardous without proper protective equipment.
4. Agreement to the following:

It is expressly agreed between the Client and Turner Building Science & Design, LLC that the professional services to be provided pursuant to this agreement do not include services associated with asbestos, its detection, abatement, removal and/or disposal.

Our services for this project will be provided in accordance with the attached **“Standard Conditions for Engagement”** dated July 1, 1999.

Selected References

NIOSH: We routinely provide indoor air quality forensic services for various clients throughout the United States including NIOSH (The National Institute of Occupational Science and Health). A good reference at NIOSH who is familiar with our capabilities is Jean Cox-Ganser who can be contacted at (304) 285-5818.

Schools in Northern New England: We have included a list of schools that we have provided various services to in recent years in a separate document sent via email with this proposal. We have included Mr. Turner's Curriculum Vitae (CV) via email as a separate document with this proposal.



CONTRACT FORM

Please sign and return these originals as your acceptance of the above scope and terms, including noted attachments, and your written confirmation of any verbal authorization to proceed. *Please fax the signed signature page back as soon as possible.* Please provide a retainer in the amount of \$1,500.00 at the commencement of services.

In the event the Client issues a purchase order or other instrument related to the Consultant's services, it is understood and agreed that such document is of the Client's internal accounting purpose only, and shall in no way modify, add to, or delete any of the terms and conditions of the agreement. If the Client does issue a purchase order or other similar instrument, it is understood and agreed that the Consultant shall indicate the purchase order number on the invoices sent to the Client.

We appreciate the opportunity to present this proposal, and look forward to assisting you with the proposed evaluation. If there are any elements of this proposal that do not meet your needs, or if you have any questions, please contact us in our Harrison, ME office at (207) 583-4571, ext. 11.

Sincerely,

TURNER BUILDING SCIENCE & DESIGN, LLC



William A. Turner, P.E
President/CEO



Steven M. Caulfield, P.E., C.I.H.
Sr. Vice President

WAT/sai

Enclosures

Accepted by: _____

Date: _____

By (Signature): _____

Title: _____

PO# _____



The **CLIENT** and **TURNER BUILDING SCIENCE & DESIGN, LLC (TBS)** hereby agree as follows:

1. CONTRACT - The Contract is the Proposal or Contract document that is signed and dated by TBS and the CLIENT and to which these Standard Conditions for Engagement are appended by reference.

2. COMPENSATION FOR SERVICES AND PAYMENT TERMS - The CLIENT agrees to pay TBS in accordance with the payment terms provided in the Contract.

Invoices will be submitted monthly unless specifically detailed otherwise in the accompanying contract or signed proposal.

Invoices are due and payable upon their receipt. An interest charge of one and one-half percent (1-1/2%) of the invoice amount will be added automatically to each invoice if payment is not received within thirty (30) days after the date on the invoice. Thereafter, interest on the cumulative outstanding balance will be added at a rate of one and one-half percent (1-1/2%) per month. All payments received shall be applied to the oldest invoices first.

3. CLIENT RESPONSIBILITIES

Project Requirements: The CLIENT shall provide to TBS all criteria and information as to requirements for the Project including objectives, constraints, performance requirements, expendability and budgetary limitations; and furnish copies of all design and construction standards which the CLIENT will require to be incorporated into the Project.

Client Representative: The CLIENT shall designate in writing a person to act as the CLIENT'S representative with respect to the services to be rendered under this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define CLIENT'S policies and decisions with respect to TBS's services for the Project.

Existing Information: The CLIENT shall provide TBS with all information available to the CLIENT pertinent to TBS's work under this Agreement. The CLIENT shall furnish to TBS, as required for performance of TBS's Basic Services, the following:

- Environmental assessment and impact statements;
- Property, boundary, easement, right-of-way topographic and utility surveys;
- Property descriptions;
- Zoning, deed and other land use restriction;
- Data prepared by or services of others, including without limitation borings, probings and subsurface explorations, hydrographic surveys, laboratory tests and inspections of samples, materials and equipment and appropriate professional interpretations of all of the foregoing; and
- Other special data or consultations;

all of which TBS shall be entitled to use and rely upon with respect to the accuracy and completeness thereof, in performing services under this Agreement. The CLIENT shall assist TBS as necessary to obtain available pertinent information from Federal, State or local offices or from other engineers or others who have previously worked for the CLIENT on matters affecting this Project.

Access: The CLIENT shall acquire all necessary easements, rights of way, land takings and arrange for access to and make all provisions for TBS and its subconsultants to enter upon public and private property as required for TBS to perform its services.

Review Documents: The CLIENT shall examine all documents prepared for the Project by TBS; and at the CLIENT'S option, obtain advice from legal counsel, insurance counsel and other appropriate advisors, and advise TBS of any opinion or recommendations resulting from paid advice.

Permits: The CLIENT shall secure and maintain all necessary approvals and permits from all governmental authorities having jurisdiction over the Project and such approvals and consents from others as may be necessary for completion of the Project.

Notice: The CLIENT shall give prompt written notice to TBS whenever he observes or otherwise becomes aware of any development that affects the scope or timing of TBS's services.

Additional Work: The CLIENT shall furnish, or direct TBS to provide necessary Additional Services.

Costs: The CLIENT shall bear all costs incident to compliance with the requirements of this Section 3.

4. DOCUMENTS - All reports, design drawings, field data and notes, laboratory test data, calculations, estimates and other documents that TBS prepares as instruments of service shall remain TBS's property. The CLIENT agrees that TBS's services are on behalf of and for the exclusive use of the CLIENT and that all reports and other documents furnished to the CLIENT or his agents shall be utilized solely for this project. These documents are not intended or represented to be suitable for reuse by CLIENT or others in connection with (a) the completion of the Project if TBS's agreement has been terminated or TBS otherwise is not involved in the Project; (b) extensions of the Project; and/or (c) any other project. Any reuse without written verification or adaptation by TBS for the specific purpose intended will be at CLIENT's sole risk and without any liability or legal exposure to TBS or its consultants. The CLIENT shall indemnify and hold harmless TBS, and its consultants, from any and all claims, damages, losses and expenses including attorneys' fees arising out of or resulting therefrom. Any such verification or adaptation will entitle TBS to further compensation at rates to be agreed upon by CLIENT and TBS.

5. RESTART - If the Project is stopped for a period greater than 30 days, a restart fee will be required to compensate TBS for any necessary premium time, and for remobilization of staff and materials. Depending on the duration of the stoppage, an additional adjustment may be necessary to cover wage increases and general escalation.

Restart fee will be 10% of fee earned to date of stoppage, unless CLIENT and TBS agree on a different amount.

6. CONSTRUCTION OBSERVATION SERVICES - If TBS's construction observation services are included as part of the scope of services in the Contract, TBS will provide personnel to observe construction to ascertain that it is being performed, in general, in accordance with the plans and specifications.

TBS cannot provide its opinion on the suitability of any part of the work performed unless measurements and/or observations of that part of the construction are made by TBS personnel.

TBS's services do not make TBS a guarantor of the contractor's work, and the contractor will continue to be responsible for the accuracy and adequacy of all construction or other activities performed by the contractor. The contractor will be solely responsible for the methods of construction; supervision of personnel and construction; control of machinery; falsework, scaffolding, or other temporary construction aids; safety in, on, or about the job site; and compliance with OSHA regulations.

7. REVIEW OF SHOP DRAWINGS - If TBS's contract with the CLIENT so requires, TBS shall review (or take other appropriate action in respect of) Shop Drawings, samples and other data which Contractor(s) is (are) required to submit, but only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents. Such review or other actions shall not extend to means, methods, techniques, sequences or procedures of manufacture (including the design of manufactured products) or construction, or to safety precautions and programs incident thereto. TBS'S review or other actions, as described above, shall not constitute approval of an assembly or product of which an item is a component, nor shall it relieve the Contractor(s) of (a) its (their) obligations regarding review and approval of any such submittals; and (b) its (their) exclusive responsibility for the means, methods, sequences, techniques and procedures of construction, including safety of construction.

8. CONTRACTOR PERFORMANCE - It is the CLIENT's responsibility to hire the Contractor, and it is the Contractor's responsibility to install and complete fully operable systems. The CLIENT agrees to pay TBS 2.5 times Direct Personnel Expense for all its troubleshooting work due to Contractor's inability to achieve satisfactory operation.

CLIENT shall hold harmless, defend and indemnify TBS, its officers, agents, employees and consultants, from any and all liabilities, claims, damages and suits arising out of the negligence of the CLIENT or its agents, or liability due to the

negligence of any Contractor(s) performing any portion of the work and supplying any materials, or any other parties, except for any liability of TBS or its consultants due to the sole negligence of TBS, or its consultants.

9. COST ESTIMATES - Any estimates or opinions of project or construction costs are provided by TBS on the basis of TBS's experience and qualifications as an architect/engineer and represent its best judgment as an experienced and qualified architect/engineer familiar with the construction industry. Since TBS has no control over the cost of labor, materials, equipment or services furnished by others or over competitive bidding or market conditions, it cannot guarantee that proposals, bids or actual Project costs or construction costs will not vary from any estimates or opinions of costs prepared by TBS. Similarly, since TBS has no control over building operation and/or maintenance costs, TBS cannot and does not guarantee that the actual building or system operating or maintenance costs will not vary from any estimates given by TBS. No fixed limit of construction cost is established as a part of this Agreement.

10. STANDARD OF CARE - TBS's services will be performed in accordance with generally accepted practices of the Architects/Engineers providing similar services at the same time, in the same locale, and under like circumstances.

11. SUSPENSION OF WORK - The CLIENT may, at any time, by ten (10) day written notice, suspend further work by TBS. The CLIENT shall remain fully liable for and shall promptly pay TBS the full amount for all services rendered by TBS to the date of suspension of services plus suspension charges. Suspension charges shall include the cost of putting documents and analyses in order, personnel and equipment rescheduling or reassignment adjustments, and all other related costs and charges directly attributable to suspension.

If payment of invoices by the CLIENT is not maintained on a thirty (30) day current basis, TBS may, by providing a ten (10) day written notice to the CLIENT, suspend further work until payments are restored to a current basis. In the event TBS engages counsel to enforce overdue payments, the CLIENT shall reimburse TBS for all reasonable attorney's fees and court costs related to enforcement of overdue payments. The CLIENT shall indemnify and save harmless TBS from any claim or liability resulting from suspension of the work due to non-current payments.

12. INSURANCES - TBS is protected by Worker's Compensation Insurance and Employer's Liability Insurance. TBS will furnish certification upon written request. The CLIENT agrees that TBS will not be liable or responsible to the CLIENT for any loss, damage, or liability beyond the amounts, limits, exclusions, and conditions of such insurance.

13. PROFESSIONAL LIABILITY - The CLIENT agrees that TBS's liability to Client and to Client's general or other contractors and subsequent owners of the property for damages attributable to TBS's negligent acts, errors, or omissions shall be limited to the sum of \$50,000. or to the total fee for services rendered by TBS, whichever is greater.

The CLIENT shall advise its general and other contractors of this limitation to TBS's liability, shall obtain their agreement to be bound by this limitation, and shall indemnify, defend, and hold TBS free and harmless from, (1) all damages, costs, and expenses, including attorneys' fees, in excess of this limitation, and (2) all damages, costs, and expenses, including attorneys' fees, attributable to allegations of defects or deficiencies in the project not shown to have been caused by TBS's fault or neglect.

14. INDEMNIFICATION FOR HAZARDOUS MATERIALS - The CLIENT agrees that TBS has not contributed to the presence of hazardous wastes, oils, asbestos or other hazardous materials that may exist or be discovered in the future at the site and that TBS does not assume any liability for the known or unknown presence of such materials.

Therefore, the CLIENT shall defend, indemnify, and hold harmless TBS, its consultants, subcontractors, agents and employees from and against all claims, damages, losses, and expenses including defense costs and lawyer's fees that result from the failure to detect or from the actual, alleged, or threatened discharge, dispersal, release, or escape of any solid, liquid, gaseous or thermal irritant, asbestos in any form, or contaminants including smoke, vapor, soot, fumes, acids, alkalis, chemicals, waste, oil or other hazardous materials or pollutants. The CLIENT shall be liable under this paragraph for claims, damages, losses, and expenses including defense costs and attorney's fees, unless such claims, damages, losses and expenses are caused by TBS's sole negligence.

15. WAIVER OF SUBROGATION - The CLIENT and TBS waive all rights against each other and against the Contractors, consultants, agents and employees of the other for damages, but only to the extent covered by any property or other insurance. The CLIENT and TBS shall each require similar waivers from their contractors, consultants and agents.

16. SUCCESSORS AND ASSIGNS - The CLIENT and TBS each binds himself, his partners, successors, executors, administrators and assigns, to the other party of the Agreement and to the partners, successors, executors, administrators and assigns, for such other party to all covenants of this Agreement.

Except as above, neither the CLIENT or TBS shall assign, sublet or transfer his interest in this Agreement without the written consent of the other party hereto.

Nothing in this paragraph shall prevent TBS from employing such independent consultants, associates, and subcontractors as he may deem appropriate to assist in the performance of the services of this Agreement.

17. TERMINATION - Either party may terminate this Agreement in whole or in part, in writing, if the other party substantially fails to fulfill its obligations under this Agreement through no fault of the terminating party. However, no such termination may be effected unless the other party is given 1) not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate and 2) an opportunity for consultation with the terminating party before termination.

Upon termination, the CLIENT shall pay TBS for all work completed prior to the effective date of the termination. If compensation within the Agreement is based on a lump sum, the amount due TBS at termination shall be computed as the percentage complete of the work times the lump sum. If compensation is based on billing rates or actual costs, the amount due at termination shall be computed based on hours charged to the Project at termination times the appropriate ratios.

Appendix D

Summary of District Responses
to Occupant Concerns
(Provided By District)

General Project Timeline & Responses

February 22, 2010	Student A – Allergic Reaction	Student A reports to Nurse’s Office with complaint of allergic reaction.
February 23, 2010	Student A – Allergic Reaction	Student A reports to Nurse’s Office with complaint of allergic reaction.
March 10, 2010	Student A – Allergic Reaction	Student A reports to Nurse’s Office with complaint of allergic reaction.
March 12, 2010	Student A – Allergic Reaction	Student A reports to Nurse’s Office with complaint of allergic reaction.
March 18, 2010	AQM Summary Report	AQM performs IAQ assessment of Rooms 4, 14, 103, 116, 200, and 203 as part of the District’s periodic IAQ evaluation procedure and IAQ complaints.
April 7, 2010	AQM Indoor Air Quality Assessment - BHS	AQM performs IAQ assessment of Rooms 11, 13, 14, 103, 106, 113, 114, 115, 116, 200, 208, and Media Center as part of the District’s periodic IAQ evaluation procedure. The evaluation also included Biddeford Primary School, JFK Memorial School, and Biddeford Intermediate School.
April 15, 2010	AQM Assessment Report BHS	AQM performs IAQ assessment for Room 14 in response to complaint of water intrusion.
June 21, 2010	Ledgewood Phase 1 Structural Preparation	Ledgewood begins work on exterior foundations, site work, structural steel, and new main entrance area.
August 16, 2010 (week of)	Ledgewood Phase 1 Prep for Building Construction	Ledgewood constructs temporary walls with doors and frames equipped with factory-installed weather stripping.
August 26, 2010	Student A – Allergic Reaction	Student A experiences allergic reaction during athletic practice on Doran Field.

September 6, 2010 (week of)	Ledgewood Phase 1 First Floor	Actual construction begins on physical building. Ledgewood installs construction doors, established at access points with sheetrock separations. At existing walls adjacent to occupied spaces that do not go to the deck, the space is closed off with plastic sheeting and taped at the edges. High efficiency particulate air (HEPA) filters are used in interior construction areas. Interior cutting or drilling of concrete is performed using wet cutting or a HEPA vacuum dust collection as per OSHA standards. Subcontractor requirements to maintain clean/safe site, and review on a regular basis.
September 9, 2010	Student A & B – Accommodations	Provisions for extensions in deadlines for incompletes as needed (effective since 09/09/10).
September 22, 2010	Student A – Allergic Reaction	Student A reports to Nurse’s Office with complaint of allergic reaction.
September 23, 2010	Indoor Air Quality Evaluation BHS	AQM performs IAQ evaluation of Rooms 6, 7, 208, 215, 507, 506, and the cafeteria in response to complaints.
September 27, 2010	Ledgewood Work Practice Modifications	Ledgewood modifies equipment used within the courtyard by adding catalytic oxidizer to equipment, converting equipment from gasoline power to propane, implements no-idle policy when possible, and works with subcontractors to switch concrete mixers and portable saws from gasoline power to electric units as a way of reducing emissions that may be drawn into the facility.
October 15, 2010	Water Intrusion Lower Locker Room	Water entered the building due to heavy rains and wind. New slab was covered with poly for curing / trapping water against existing building. Ledgewood sealed transition from existing slab to new. Custodial staff cleaned area.

October 16, 2010	Water Intrusion Additional Cleaning	Ledgewood contracted FMS to perform additional cleaning to ensure removal of moisture and general cleanliness of the area.
October 22, 2010	Student B – Allergic Reaction	Student B reports to Nurse’s Office with complaint of allergic reaction.
October 29, 2010	Indoor Air Quality Evaluation BHS	AQM performs IAQ evaluation of Room 203 in response to complaints.
November 5, 2010	Indoor Air Quality Evaluation BHS	AQM performs IAQ evaluation of Room 215 in response to complaints.
November 16, 2010 (week of)	BHS Principal Discusses Increase in Dust Levels with Ledgewood	Work plan includes increased frequency of cleaning by Ledgewood and school maintenance staff, additional plastic barrier added to doors separating all access points into occupied areas, and additional HEPA filters run 24/7. Increase in assigned custodial staff to respond to elevated dust levels caused by construction, washing floors on main level at mid-day and during the evening.
November 21 - December 31, 2010	Deep Cleaning	Deep cleaning of unit ventilators, vents, and grated spaces under heaters.
December 7, 2010 (week of)	Deep Cleaning	Deep cleaning of vent in Room 6 in response to complaints from occupant.
November 23, 2010	Student A – Allergic Reaction	Student A reports to Nurse’s Office with complaint of allergic reaction.
November 29, 2010	Indoor Air Quality Evaluation	AQM performs IAQ evaluation of Rooms 203, 215, and 216 in response to complaints.
November 29, 2010	Student B – Allergic Reaction	Student B reports to Nurse’s office with complaint of allergic reaction.
November 30, 2010	School Committee Workshop IAQ at BHS	Workshop to review facts surrounding IAQ concerns at BHS.
December 1, 2010	Indoor Air Quality Evaluation BHS	AQM performs IAQ evaluation of Rooms 4, 6, 7, 8, 14, 105, 113, 115, 208, 220, 222, 223, and girl’s locker room in response to complaints.
December 2, 2010	Review Meeting at High School	The mayor and superintendent of schools hold a meeting at the high school to review the issue of IAQ.

December 3, 2010	Press Release	A press release is issued to inform the public of actions taken in response to complaints.
December 3, 2010	Ledgewood Construction Schedule Modification	Ledgewood modifies construction schedule for work performed inside or adjacent to occupied areas by rescheduling work to after school hours. Doorways are inspected and sealed with additional weather stripping as needed, double plastic sheathing air locks are constructed based on design used by abatement contractor, seams and gaps are taped, HEPA filters used to establish negative pressure where possible, and continued use of HEPA filters with diffuser boxes for general enclosed construction areas.
December 3 - 6, 2010	Teacher Survey	“Health of BHS Staff” survey is conducted through SurveyMonkey.
December 6 - 7, 2010	Ledgewood/ESHA Testing	Ledgewood contracts with ESHA to conduct a comprehensive site dust characterization and respirable dust sampling for crystalline silica.
December 6 - 10, 2010	Honeywell Maintenance Schedule Adjusted	In response to IAQ concerns, Honeywell inspected, cleaned, and changed filters at all unit ventilators in the '71 wing of the high school. This work normally performed three times per year.
December 7, 2010	Student A – Accommodations	Provisions for 1:1 teacher instruction in Portable Annex. Started provisions for tutoring service; paid tutoring began 01/03/11.
December 8 - 9, 2010	AQM / Galson Laboratories Report	AQM performs 24-hour IAQ sampling for silica in Rooms 4, 14, 105, 107, 203, 209, 215, 216, 223, the little theatre; in the halls by Room 8, 207, Chorus, Girl’s Gym, Café, and the Girl’s Locker Room; and above the ceilings of Rooms 105 and 215 in response to silica dust concerns.

December 9, 2010	Northeast Laboratory Services	AQM performs IAQ evaluation of Rooms 104, 105, and industrial arts in response to complaints.
December 10, 2010	Larry Mare, Bureau of General Services Inspects High School	Mr. Mare visited the high school to provide an assessment of IAQ results and District responses.
December 14, 2010	Correspondence from Larry Mare to Sarah-Jane Poli	Mr. Mare provided an assessment of his review indicating “After reviewing the reports and a visual of the walk-through, the condition of this school is considered to be in good standing. It is my recommendation to follow through with cleaning behind shelves where the heating elements are and retest for mold after.”
December 14, 2010	Student A – Accommodations	Student A encouraged to and agreed to attend classes already in Portable Annex.
December 14, 2010	School Committee Vote to Hire Second Consultant	The School Committee voted to hire a second consultant to evaluate/perform IAQ services at the high school.
December 28, 2010	Indoor Air Quality Evaluation Particulate Matter and Silica Survey	Results of silica testing received and reported to School Committee
January 4, 2011	Consultant Interviews	Scheduled interview with IAQ consultant(s).
January 6, 2011	Consultant Interviews	Scheduled interview with IAQ consultant(s).
January 10, 2011	Student B – Accommodations	Provisions for 1:1 teacher instruction in Portable Annex.
January 11, 2011	Consultant Interviews	Scheduled interview with IAQ consultant(s).
January 14, 2011	Scope of Services Signed with Turner Building Science & Design, LLC	Turner Building Science & Design, LLC authorized to proceed with forensic IAQ evaluation of Biddeford High School.
January 20, 2011	Student B – Accommodations	All of student B’s non lab classes moved to the Portable Annex by 01/20/11 as well as all second semester classes.
January 23, 2010	Student A – Accommodations	Student A placed at another school through Superintendent’s Agreement.

January 27, 2011	Turner Occupant Interviews	Turner Building Science & Design, LLC conducts 12 interviews to obtain occupant specific information regarding reported health impacts and general complaints.
February 21, 2011 (week of)	Locker Cleaning	The School Department has scheduled cleaning of all lockers during the February break.