



**Georgia Tech Facilities Management**  
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# LAB VENTILATION PROJECT

**Ford ES&T and UA Whitaker Buildings**

Town Hall Meeting  
January 9, 2020

## Agenda

- Goals
- ABM Introduction & Similar Lab Ventilation Projects
- Roles & Responsibilities / Points of Contact
- Project Overview / Scope of Work
- Project Benefits
- Project Construction Flow & Schedule Update
- Lab Preparation Requirements
- Post-Construction Follow-Up
- Additional Researcher Resources and Communication Process
- Q & A

## Overall Goals

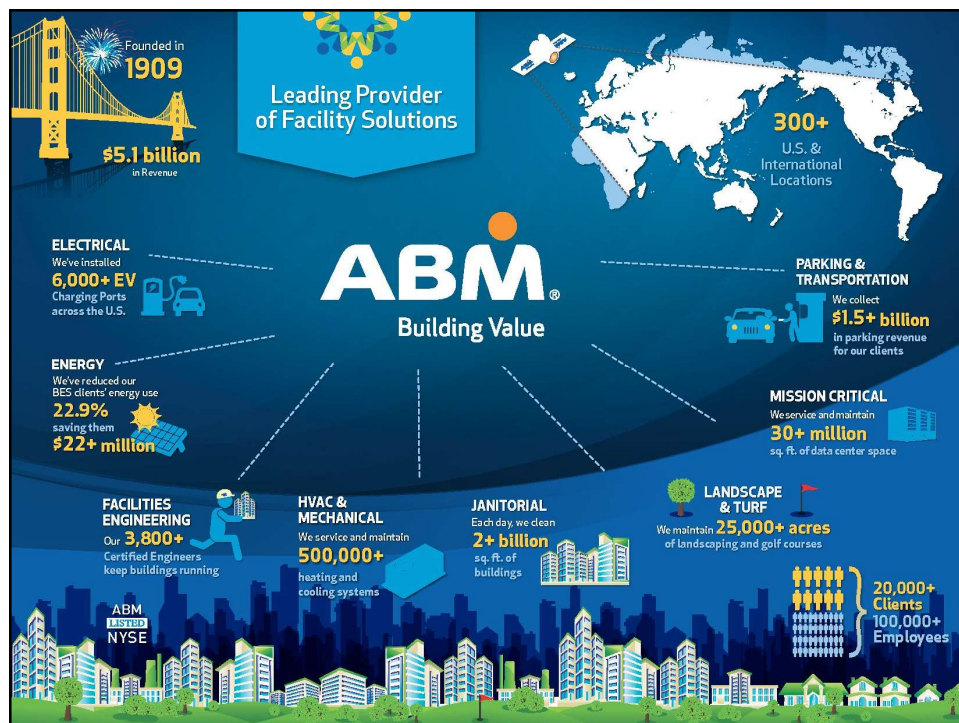
- Gain Input and Feedback
- Identify Concerns
- Construction



Progress to Date and  
Schedule General Overview

- Schedule Commitments
- Q & A

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## Roles & Responsibilities / Points of Contact

Roles	Responsibility
GT Facilities Design & Construction Key Contact	Kynthia Gaines
School of Biological Sciences Designee	Frank Stewart
School of Chemical & Biomolecular Eng. Designee	Ben Galfond
School of Chemistry & Biochemistry Designee	Angus Wilkinson
School of Civil & Environmental Eng. Designee	Guangxuan Zhu
School of Earth & Atmospheric Sciences Designee	Jean Lynch-Stieglitz
School of Biomedical Engineering Designee	Michelle LaPlaca
Advanced Technology Development Center (ATDC)	Rashida Mickens
Environmental Health & Safety (EHS)	Nazia Zakir, Ryan Lisk
Building Operations team	Rachel Arnold (UAW), Dewayne Roberson (UAW), Todd Clarkson (EST), and Curtis Burnett (EST)
GT Facilities Assoc. Director Analytics and Comm.	Jessica Rose
ABM Building Solutions Key Contacts	Robert Daw



## Lab Ventilation Project Overview

- Ford ES&T and U.A. Whitaker Buildings
- 13-month construction period (started 8/12/2019)
- Construction will impact 150 labs



## Lab Ventilation Project – ES&T

### Convert Labs with TSI controls to TEL controls

- General Lab Space Changes:
  - New TEL Room Controller
  - Purge Button
  - Area Motion Sensor(s)
  - Lab Supply Valve Actuator Change-out (new fast-acting actuator)
  - New Lab Supply Differential Pressure Sensors and Probes
  - General Exhaust Valve Actuator Change-out (new fast-acting actuator)
  - New General Exhaust Differential Pressure Sensors and Probes
- Fume Hoods Changes (when applicable):
  - TEL Fume Hood Controller
  - TEL Auto-Sash Closer with Occupancy Sensor
  - Lab Exhaust Valve Actuator Change-out (new fast-acting actuator)
  - New Lab Exhaust Differential Pressure Sensors and Probes
- Snorkels (Task Exhaust) Changes (when applicable):
  - New Fast-Acting Actuator
  - On/Off Wall Switch

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## TEL Controls (ES&T)



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## Lab Ventilation Project – U A Whitaker

### Upgrade Labs with Triatek controls

- General Lab Space Changes:
  - New/Upgraded Triatek Room Controller
  - Area Motion Sensor(s)
  - Lab Supply Valve Actuator Change-out (new fast-acting actuator)
  - New Lab Supply Differential Pressure Sensors and Probes
  - General Exhaust Valve Actuator Change-out (new fast-acting actuator)
  - New General Exhaust Differential Pressure Sensors and Probes
- Fume Hoods Changes (when applicable):
  - New/Upgraded Triatek Fume Hood Controller
  - TEL Auto-Sash Closer with Occupancy Sensor
  - Lab Exhaust Valve Actuator Change-out (new fast-acting actuator)
  - New Lab Exhaust Differential Pressure Sensors and Probes
- Snorkels (Task Exhaust) Changes (when applicable):
  - New Fast-Acting Actuator
  - On/Off Wall Switch

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## Triatek Controls (U A Whitaker)



T-STAT Room Temperature Sensor



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## Consistent Temperature Setpoint

- 72.5 degrees Fahrenheit with +/- 2.5 degree deadband
- Subject to lab requirements, determined by Questionnaire
- 3 degrees Fahrenheit of user adjustability
- Unoccupied setback, wider deadband (+/- 5 degree F)
- Space Ventilation

	Occupied Room	Unoccupied Room
Air Changes Per Hour	6	4

- Occupancy
  - Lab/Space General Hours of Operation: 7AM to 10PM (Mon.-Fri.)
  - Installed area motion sensors will detect occupancy and adjust the space to "occupied", thereby increasing the ventilation rate and adjusting the temperature deadband back to 2.5 degrees F

## Lab/Space and Task Equipment Ventilation

### GA Tech EHS Lab Safety Manual

	Current	Revised
General Rules Regarding Laboratory Fume Hoods	"General purpose hoods shall operate at 100 linear feet per minute (LFPM) +/- 20%"	"General purpose hoods shall operate at 80 linear feet per minute (LFPM) +/- 20%"

- Tested to failure @ 40 FPM during pilot case

## Project Benefits

- Consistent pressure and temperature controls
  - Enable better working conditions
- Safer, better functioning lab
  - Consistent environmental conditions
- Install purge button for release of chemicals to increase ventilation rate
- ABM onsite technical support for 10 years to deal with various issues & preventative maintenance
- Reduced carbon footprint for the Institute



## Construction Flow

- Bound to a **strict** 13-month construction period
  - Approx. 3 to 5 labs will be in construction simultaneously at any given time during the 13-month period
- Intent is to concentrate construction efforts on a single floor or wing of the building at a time
  - Work will move through building floor by floor
- 35 labs in ES&T completed to date (primarily on the floors 2 and L1)
- U A Whitaker construction scheduled to start on January 20, 2020 (ground floor)





## Construction Flow

### Pre-planning & Scheduling Logistics

(approximately 30 days prior to lab construction)

- A pre-construction lab visit will be required for **each lab**
  - May include representatives from Facilities and EHS
- Identify critical information:
  - Research that is sensitive to vibration
  - Hazardous chemical which need special storage
  - Access to experiment during construction
  - Experiments that cannot be interrupted



## Construction Flow

### Pre-planning & Scheduling Logistics

(approximately 30 days prior to lab construction)

- Preliminary air flow readings
  - Contractor in lab for approximately two hours, primarily before 10:00 AM
  - The research teams will not need not be present
  - The research teams do not need to halt any experiments
  - The contractor will be opening up each fume hood to the 18" sash height position.





# Construction Schedule

## Georgia Tech Potential Project Flow

Select a period to highlight at right. A legend describing the charting follows.

Revised 12/18/19

Period Highlights:

ACTIVITY	PLAN START	Dept.	Lab PI	Floor	Section	Week	PLAN DURATION	PERCENT COMPLETE
BME Schedule Coordination	28					1/13/2020	1	0%
BME Lower Level								
BME Lower Level Floor AS-Built Docs	32					2/10/2020	5	0%
BME Lower Level Floor Drawing Review & Finalization	37					3/16/2020	2	0%
BME 0243, 0244	29	BME	Banarishna	0		2/20/2020	1	0%
BME 0246, 0250	30	BME	Banarishna/ Rain	0		1/27/2020	1	0%
BME 0245	31	BME	Banarishna	0		2/9/2020	1	0%
BME 1st Floor								
BME 1st Floor AS-Built Docs	36					2/24/2020	5	0%
BME 1st Floor Drawing Review & Finalization	41					3/30/2020	2	0%
BME 1219 & 1246	34	BME	Cheng Zhu/Tsygankov	1		2/10/2020	1	0%
BME 1248 & 1249	35	BME	Cheng Zhu	1		2/17/2020	1	0%
BME 2nd Floor								
BME Second Floor AS-Built Docs	42					3/30/2020	5	0%
BME Second Floor Drawing Review & Finalization	47					5/4/2020	2	0%
BME 2216	36	BME	Dahman	2		2/24/2020	1	0%
BME 2217, 2218 & 2236	37	BME	2217 Equipment Corridor 2218 Dahman 2236 Hollister	2		3/2/2020	1	0%
BME 2222, 2235, 2237/2244, 2234	38	BME	2235 Hollister 2237 Margulies 2244 Hollister	2		3/9/2020	2	0%
BME 0238 & 2240/2241	40	BME	0238 Shared Instructional lab 2240 LaPace/Margulies	2		3/16/2020	1	0%
BME 2245	41	BME	LaPlace	2		3/23/2020	1	0%

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## Lab Preparation Requirements

- All labs with fume hoods and/or task exhaust (snorkels) will be retrofitted
- Lab operations will be interrupted for 7 days
  - Construction above the ceiling
  - **"Day 2" walk-through with research team representative**
  - Equipment Commissioning
  - **Controls training for research teams (typically Friday prior to turnover)**
- **Be Construction Ready:** Time for Equipment and Chemical removal is not included in the 7 days

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## Lab Preparation Requirements

- Hoods must be vacated; as well counters on either side (see photograph)
- Storage under does not have to be vacated
- Remove all chemicals, equipment and tools from inside fume hood - **Must be empty**
- Remove equipment and chemicals from benchtop on either side of fume hoods - **Need to access side panels of the fume hood**
- Lab benches and equipment will be physically covered by ABM
- ABM can allow occasional visits to lab to check on things, if arranged in advance

## ES&T Lab

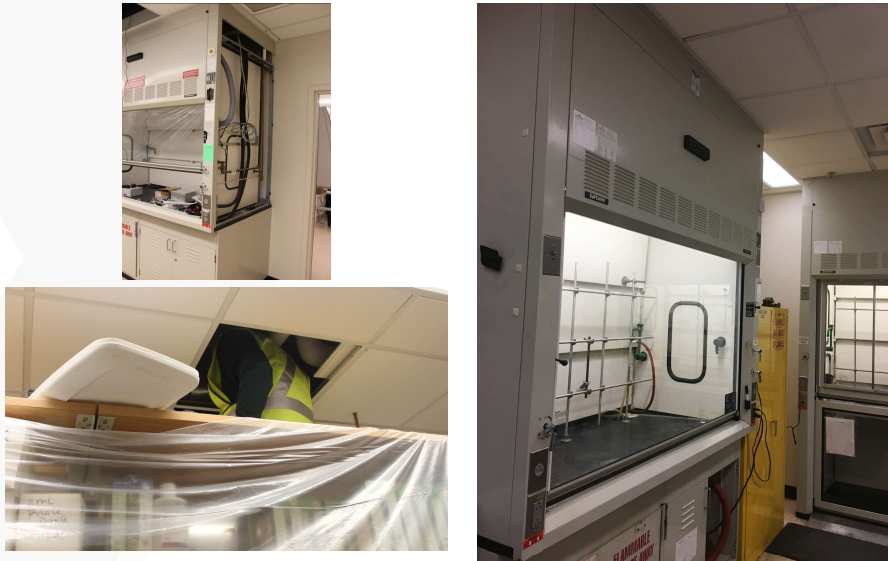


## ES&T Lab



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## ES&T Lab



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## ES&T Lab



## Post-Construction Follow Up

- Post-Construction interviews to be held with research teams
  - Evaluate conditions of the lab after construction is completed
  - Validate projected energy savings
  - Feedback on the overall construction process

## Researcher Resources During Construction and Communication

- Follow up after Town Hall Meetings
- School-Wide Meetings
- Town Hall/Q & A Meetings
- Website Communication:
  - Project Overview & Facts
  - Meeting Minutes
  - Updated Construction Schedule

[facilities.gatech.edu/lab-vent](https://facilities.gatech.edu/lab-vent)



## Q & A

