Building 54
Priority Infrastructure Renewal

Town hall #1 Materials Testing Update
April 3, 2019
Agenda

- Project Goals
- Schedule
- First Phase
  - Testing
  - Occupant Impact
  - Logistics & Safety
- Communications
  - Construction Notification
- Q&A
Building 54: project goals

PROJECT STATUS
We are in the investigation and design stage.

PROJECT GOALS

Goal 1: Arrest Water Intrusion from Envelope
- Replace the roof system
- Eliminate infiltration at the exterior walls and windows
- Preserve architectural character & provide safe conditions

Goal 2: Provide Safe and Reliable Electrical Service
- Renew aged and obsolete basement & penthouse level electrical substations and main risers/feeders
- Provide safe and resilient electrical system

Goal 3: Improve Comfort, Prolong System Operation & Eliminate Stairwell Ponding
- Evaluate mechanical systems & building controls
- Implement measures to improve occupant comfort, prolong system operation, and eliminate stairwell ponding

Goal 4: Ensure Regulatory Compliance
- Identify and recommend strategies to meet accessibility and building code requirements triggered by the renewal
- Implement building modifications, variances, or other strategies
Building 54: project schedule

<table>
<thead>
<tr>
<th>Period</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY18 Q2</td>
<td>Ex Com Approval</td>
</tr>
<tr>
<td>FY18 Q3</td>
<td>Designer Selection</td>
</tr>
<tr>
<td>FY18 Q4</td>
<td>CM Selection</td>
</tr>
<tr>
<td>FY19 Q1</td>
<td>Design Funding Approval</td>
</tr>
<tr>
<td>FY19 Q2</td>
<td>Design</td>
</tr>
<tr>
<td>FY19 Q3</td>
<td>Construction Funding Request</td>
</tr>
<tr>
<td>FY19 Q4</td>
<td>Pre-con</td>
</tr>
<tr>
<td>FY20 Q1</td>
<td>Construction</td>
</tr>
<tr>
<td>FY20 Q2</td>
<td></td>
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<tr>
<td>FY20 Q3</td>
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<tr>
<td>FY20 Q4</td>
<td></td>
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<tr>
<td>FY21 Q1</td>
<td></td>
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<tr>
<td>FY21 Q2</td>
<td></td>
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<tr>
<td>FY21 Q3</td>
<td></td>
</tr>
</tbody>
</table>

Note that dates are subject to change
Building 54: testing schedule & impacts

- **Hours**
  - 8am-3pm M-F
  - Off-hours investigation

- **Visual Impact**
  - Scaffolding at ground level
  - Swing staging
  - Telescoping manlift
  - Laborers

- **Noise & Vibration**
  - Minimal impact from test cuts & coring/chipping

- **Other:**
  - Shutdowns as necessary
  - Water testing at windows

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### Testing Schedule

<table>
<thead>
<tr>
<th>Testing</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
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</thead>
<tbody>
<tr>
<td>Infrared Envelope Photography</td>
<td>2 days</td>
<td>Wed 3/20/19</td>
<td>Thu 3/21/19</td>
</tr>
<tr>
<td>Phase 1 - Envelope Testing</td>
<td>3 days</td>
<td>Mon 3/25/19</td>
<td>Wed 3/27/19</td>
</tr>
<tr>
<td>Pre Test and Balance</td>
<td>8 days</td>
<td>Mon 4/1/19</td>
<td>Wed 4/10/19</td>
</tr>
<tr>
<td>Electrical Bus Thermography</td>
<td>2 days</td>
<td>Mon 4/1/19</td>
<td>Tue 4/2/19</td>
</tr>
<tr>
<td>Install Staging &amp; Protection</td>
<td>2 days</td>
<td>Mon 4/8/19</td>
<td>Fri 4/12/19</td>
</tr>
<tr>
<td>Electrical Bus Inspection/Testing</td>
<td>2 days</td>
<td>Wed 4/24/19</td>
<td>Thu 4/25/19</td>
</tr>
<tr>
<td>EHS Screening</td>
<td>5 days</td>
<td>Mon 4/15/19</td>
<td>Fri 4/19/19</td>
</tr>
<tr>
<td>Phase 2 - Envelope Testing</td>
<td>15 days</td>
<td>Mon 4/22/19</td>
<td>Fri 5/10/19</td>
</tr>
<tr>
<td>3D Scanning</td>
<td>5 days</td>
<td>Tue 4/23/19</td>
<td>Tue 4/30/19</td>
</tr>
<tr>
<td>Remove Temporary Protection</td>
<td>4 days</td>
<td>Mon 5/13/19</td>
<td>Thu 5/16/19</td>
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<tr>
<td>Early Testing Completed</td>
<td>0 days</td>
<td>Thu 5/16/19</td>
<td>Thu 5/16/19</td>
</tr>
</tbody>
</table>

*Note that dates are subject to change*
Building 54: testing description

Testing scope

Infrared Photography: FLIR camera survey from building exterior, identify areas of high temperature differentials in material and paths of air infiltration

EHS testing: test envelope components for regulated hazardous material

Visual Inspection: confirmation and assessment of previously noted issues, weathering of concrete, condition of sealants, condition of previous patches, etc.

Carbonation Testing: collect dust from drilling to analyze pH of the concrete at different areas of the building and different depths from the surface, provides indication of reinforcing steel corrosion

Scanning: use of Ground Penetrating Radar (GPR) and profometer to check diameter, placement, and coverage of reinforcing steel at different typical locations

Petrographic Analysis: collect and send concrete cores to a remote laboratory, analyze the concrete chemical content for contaminants (e.g. chlorides) that can degrade concrete, density/porosity, and composition

RILEM testing: measure water absorption rate of concrete in situ, inform how direct absorption of water in to the concrete is affecting concrete condition and interior comfort

Air and Water Infiltration: increasing levels of standardized air and water methods starting with AAMA 501.2 (water spray testing) and performing additional tests if recommended by consultants

Cleaning tests: test cleaning or treating some example areas to examine results, if recommended by conservator
Building 54: logistics & safety plan
Building 54: communications & outreach

Our goal is to provide information about construction activities and their expected impacts (noise, vibration) to you in advance so you can plan your work and ask the team any questions.

- **Individual meetings**: with key contacts in offices to brief on scope of work, schedule, anticipated impacts.

- **Information sessions (like this one)** at major milestones.

- **Forecast emails**: projected activities and impacts, sent to key contacts.

- **Construction notifications**: Facilities’ Construction web page & issued to key contacts:

  [http://web.mit.edu/facilities/construction/updates](http://web.mit.edu/facilities/construction/updates)
Building 54: construction notification

Window Replacement / Façade Repairs (Buildings 4, 8, 10 and 13)
Weekly construction update: 6/22/2018

This forecast of construction activities will be issued throughout the duration of the project. For each activity we will provide a schedule, effects, duration, and a description of the scope. There may be occasions when the construction activities overlap or interfere with your research, teaching, studies, or work. Our goal is to provide you with the information you need to allow you to plan and manage your activities during the construction.

<table>
<thead>
<tr>
<th>Activity</th>
<th>P./Zone</th>
<th>Notes</th>
<th>Duration</th>
<th>Effects</th>
<th>Affected Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ngoing occupation @ building 13 roof top</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Bid 13 (east) nights - washing exterior</td>
<td></td>
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<tr>
<td>3</td>
<td>Bid 13 (north) nights/weekends - exterior façade work</td>
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<tr>
<td>4</td>
<td>Bid 13 (north) nights/weekends - exterior façade work</td>
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<tr>
<td>5</td>
<td>Bid 13 (north) 5E days - Kember waterproofing installation</td>
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<tr>
<td>6</td>
<td>Bid 10 (west) interior/interior scope for window replacement</td>
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</table>

*Please note that the schedule is subject to change due to weather and material delivery.

KEY
- Red: High
- Orange: Moderate
- Yellow: Low

Questions?
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Contacts

Construction questions:

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Project Manager

Sarah MacDonald (smacd@mit.edu, 857-320-7009)
Project Manager

Space questions:

PROVOST TBD

Other Issues:

Brian Healy (healyb@mit.edu, 617-258-8565)
Program Manager, Campus Construction

Scott Wade (swade@mit.edu, 617-253-2819)
Facility Manager, EAPS
Questions & answers