

City of Madison Fire Department Position Statement


Owner: Joel Schriever Exact Sciences	Project Name: Clinical and Production Lab	Contact: Jody Shaw Potter Lawson
Address: 441 Charmany Drive Madison, WI 53719	Building Location: 650 Forward Drive Madison, WI 53711	Address: 749 University Row Suite 300 Madison, WI 53705
Owner Phone: 608-210-5176 Email: jschriever@exactsciences.com	Building Occupancy or Use: Unlimited Area Group B, F, M, & S	Phone: 608-274-2741 Email: jodys@potterlawson.com

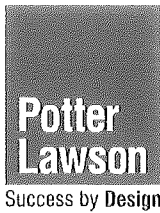
Rule Being Petitioned: IBC 507.5

I have read the application for variance and recommend: (check appropriate box)

Approval
 Conditional Approval
 Denial
 No Comment

- The pedestrian connector is necessary for protection from falling ice from the nearby weather tower; otherwise all other provisions of IBC 507.5 are met.
- The building construction will be Type IIB where as any type of construction would otherwise be permitted.
- A manual wet standpipe system shall be provided to facilitate firefighting operations deep inside the structure.

Name of Fire Chief or Designee (type or print) Bill Sullivan, Fire Protection Engineer	
City of Madison Fire Department	Telephone Number 608-261-9658
Signature of Fire Chief or Designee 	Date Signed 7/28/2020



Variance Request

To: Building Board
From: Potter Lawson Inc.
cc: Joel Schriever
Date: June 15th, 2020

Re: Building Code Variance Request
Project # 2017.01.02

2. The rule being petitioned cannot be entirely satisfied because:

The pedestrian walkway between 1 Exact Lane and 650 Forward Drive is critical to Exact Sciences' employee safety and core business functions to provide test results for their Colorectal Cancer Detection product, Cologuard. This petition is being requested due to a specific site condition, applicable to this project only.

During specific weather conditions each winter, the adjacent 1,300-foot-tall radio tower for the WMTV NBC15 tower collects ice that falls from significant heights causing threats to adjacent facilities and people. (see Assessment Summary.pdf attached). One such documented event occurred on March 1st, 2011 whereas the beltline was closed for nearly three hours due to several cars having their windshields smashed from the falling ice. The Ice Fall Study Exact Sciences commissioned in August through December of 2017 recommends covered walkways (see Site Recommendations.pdf attached) at exterior walkways and critical connections.

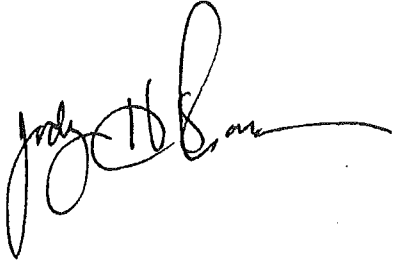
These "Ice Events" are predicted to happen several times a year. This has proved true in the first year of operation with one construction vehicle receiving ice damage and one skylight enclosure being replaced from ice damage. During these Ice Events, this pedestrian walkway is the only safe passage for employees of the Clinical Lab to move between facilities and to get to the parking structure during the ice events. For example, Clinical Lab employees move through this pedestrian walkway into 1 Exact Lane, and then through another elevated pedestrian walkway from 1 Exact Lane to the Parking Structure.

This Pedestrian Walkway is only one of several physical precautions at the Discovery Campus that Exact Sciences has been forced to enact to protect from the threat of the falling ice. Other precautions include:

1. Concrete roof over the open parking structure.
2. Heavy Gauge Perforated panels covering the side openings of the Parking structure.
3. Elevated Pedestrian Connector between the Parking Structure and 1 Exact Lane.
4. Concrete Pavers covering the entire Clinical Lab facility at 650 Forward Drive.
5. Hurricane impact rated skylight enclosures.
6. Concrete reinforced covered walkway at accessible parking to the Clinical Lab.
7. Onsite Ice event warning system (Currently in the Design and Approval Process).

This pedestrian walkway is part of the critical infrastructure for Exact Sciences to perform their core business functions and employee safety.

Thank you for your time in reviewing our request.

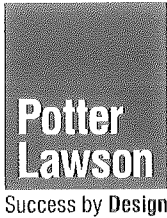
A handwritten signature in black ink, appearing to read "Jody Shaw". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jody Shaw AIA, LEED AP BD+C

Potter Lawson, Inc.

749 University Row, Suite 300 | Madison WI, 53705

T - 608.274.2741



Variance Request Supporting Information

To: Building Board
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3. The following alternatives and supporting information are proposed as a means of providing an equivalent degree of health, safety, and welfare as addressed by the rule:

The Pedestrian Walkway is installed specifically to protect the health and safety of the Exact Sciences Employees from the potential threat of the Ice Event.

The 60' yard or public way separation as indicated by 507.5 is intended to provide two key functions:

1. Exterior separation to prevent fire spread to or from the building.
 - The pedestrian walkway is fully sprinkled (per 3104.5.2), non-combustible construction (per 3104.3), is built to resist the passage of smoke (per 3104.5.2.1) and a 1 hr rated Fire Barrier is being added on the south side of the walkway. The connector should not present a pathway for fire or smoke to spread to or from any other structure.
2. Fire apparatus access around the perimeter of the building.
 - The site plan is designed to have fire access lanes on all four side of the facility. Fire access vehicles are able to access all sides of the building. Please see attached Fire Lane drawing.

Supporting Information:

- a. The 2015 IBC code commentary for Unlimited Area Buildings_507.5 Two-story buildings reads:
 - *The type of construction is not restricted.*
Per 507.5, two-story unlimited area building construction type is not limited, meaning that combustible construction is permitted (provided other separations are provided as required by code), however this facility is built of a noncombustible, type IIB construction, providing a higher level of life safety than code minimum.
- b. The 2015 IBC code commentary for 507.5 Two-story buildings reads:
 - *The open space located on the private property does not need to be dedicated to the public or publicly owned, but can be the location of parking, landscaping, roadways and other minor accessory features (tanks, generators, trash dumpster enclosures). However, the yard cannot be occupied by any exterior use that is essentially a continuation of use of the building.*

The code indicates that the yard does not have to be free and clear of all obstructions and the unoccupied space of the pedestrian walkway does not represent a continuation of the use of the building.

Alternatives to provide additional Safety:

- a. Exact Sciences has agreed to add four standpipes to the interior of the building to provide better interior firefighting capabilities.
- b. Exact Sciences has agreed to add a 1 hr rated Fire Barrier on the south end of the pedestrian walkway.

ASSESSMENT SUMMARY



Trajectory Simulation Results

The results of the computational trajectory simulations are shown in **Image 7**. The probability contours shown in **Image 7** represent where ice/snow will land on the ground once meteorological conditions are met to permit snow/ice accumulation and release from the TV tower. The predicted landing locations of snow/ice are inherently linked to the distribution of wind directions in the winter months. From **Image 7** it can be observed that for the strongest winter winds distances beyond 4,000 ft could theoretically be achieved, however have a very low probability.

Winds from approximately 70° through 150° (referenced clockwise from True North) may lead to ice/snow landing on or near the proposed development. Based on the meteorological records it implies that there is approximately a 12% probability of impact should conditions arrive that cause ice/snow to buildup on the TV tower and subsequently released. This 12% is obtained by roughly summing the color bands that encompass the proposed site (i.e. dark red (3%), red (2.6%) orange (2.25%), yellow (2%), light green (1.6%).)

As discussed above, these probabilities assume that ice/snow has already formed on the TV tower in an appreciable accretion. In order to obtain an estimate of the total probability of occurrence, it is necessary to consider the joint probability of accretion and trajectory. Based on the screening level meteorological analysis, it is possible that 21

meteorological events per year could cause problematic accreting, and a subsequent 12% chance that the site could experience an impact. Or thought of another way: on an annual basis, the site may encounter 2-3 falling ice and snow events per year (i.e. $21 \times 0.12 = 2.5$).

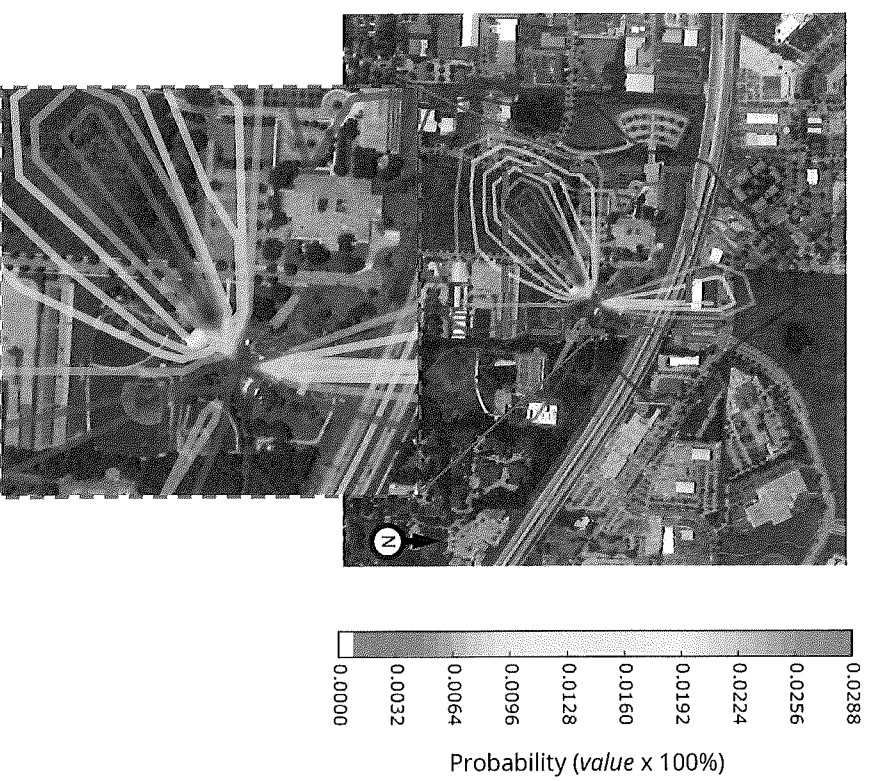


Image 7: Ice trajectory probability contour and exploded view.

SITE RECOMMENDATIONS



Covered Walkways

The design team may wish to consider covered walkways from the parking lots around the site to the building. Examples of covered walkways, which would help to ensure safe passage of pedestrians on site (assuming impact resistant materials are used for construction), are shown in **Image 19**.

Since potential falling ice debris shedding from the TV tower can occur at a wide range of trajectory angles, the overhead canopy component of the walkway should be approximately 1.5 times the height of the feature. This will provide a protection width equal to half the height of the feature. For example, if an angle of trajectory of 45° is assumed with an 8 ft high covered canopy, the overhead canopy width would need to be 12 ft in order to provide a protection width under the canopy of 4 ft (**Image 20**). Angles of trajectory approaching the ground are not expected to be less than 45° and angles of trajectory greater than 45° would result in a larger width of protection offered.

Since the TV tower is located to the east of the site, the design of any covered walkway only needs to focus on protection from the east (similar to the orientation of the covered walkway in **Image 19**) and would need to be constructed using impact resistant materials.

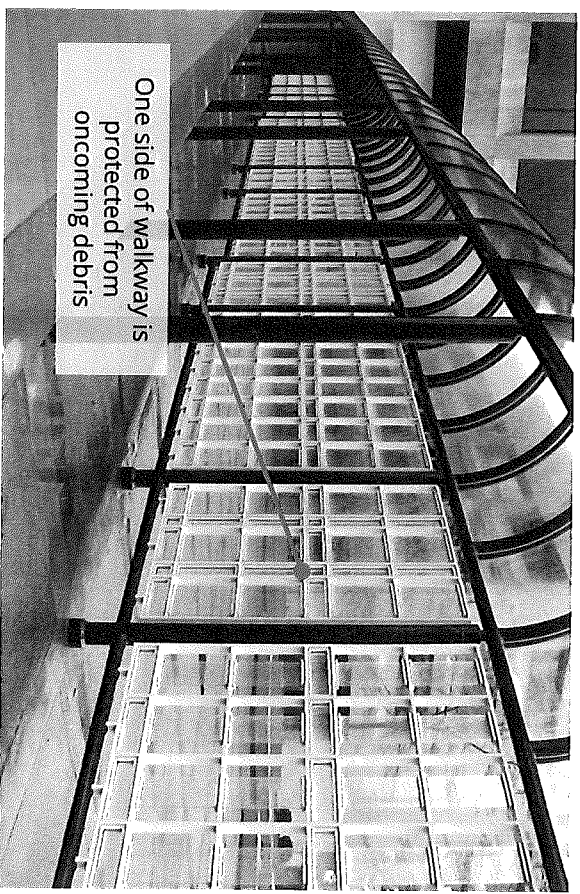


Image 19: Example of covered walkway

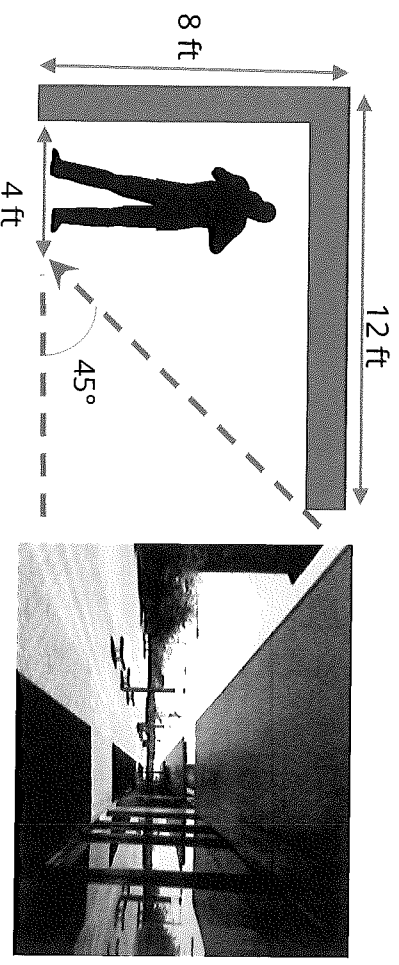


Image 20: Sample trajectory design of canopy