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Multnomah County Courthouse Day Light Analysis

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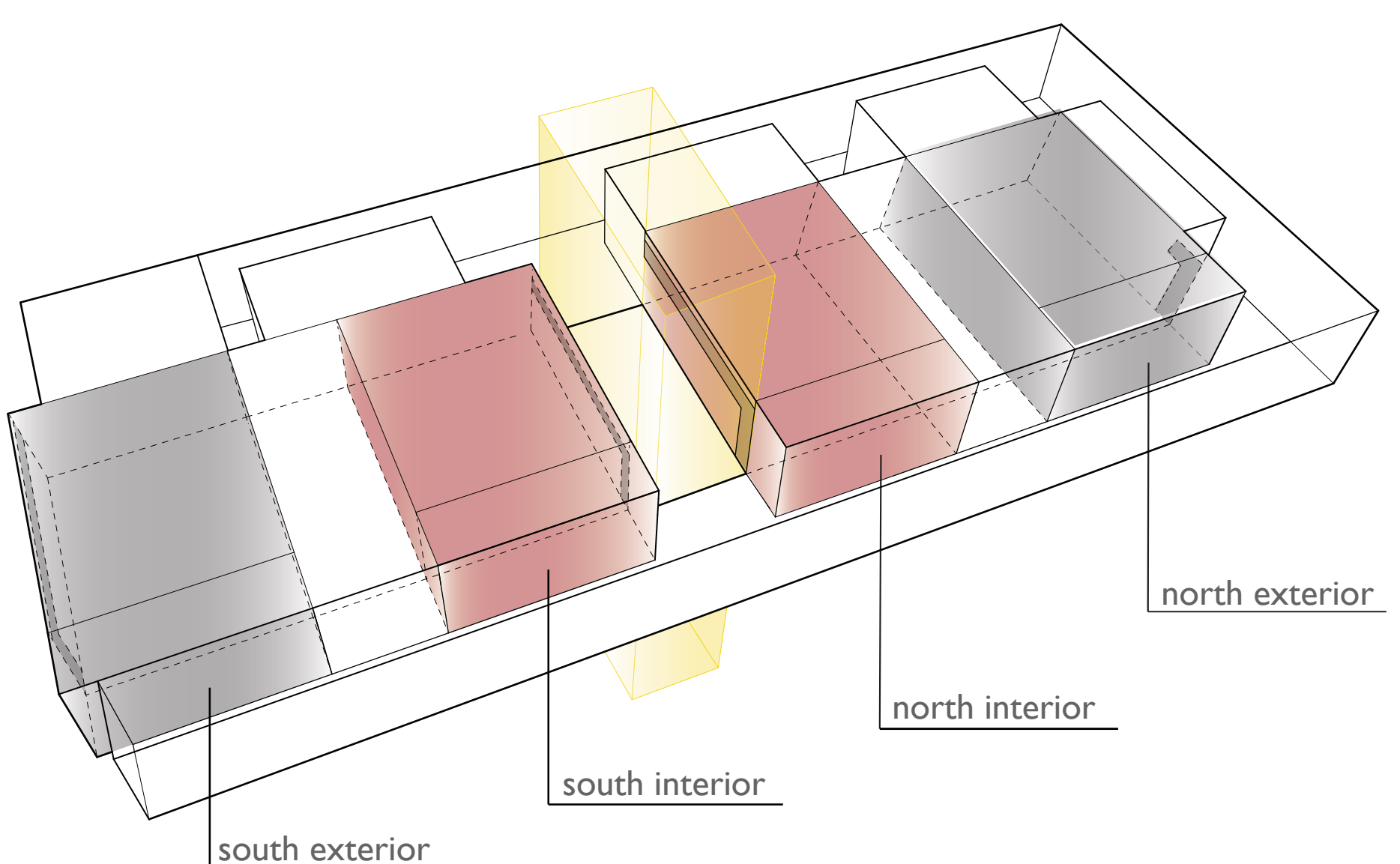
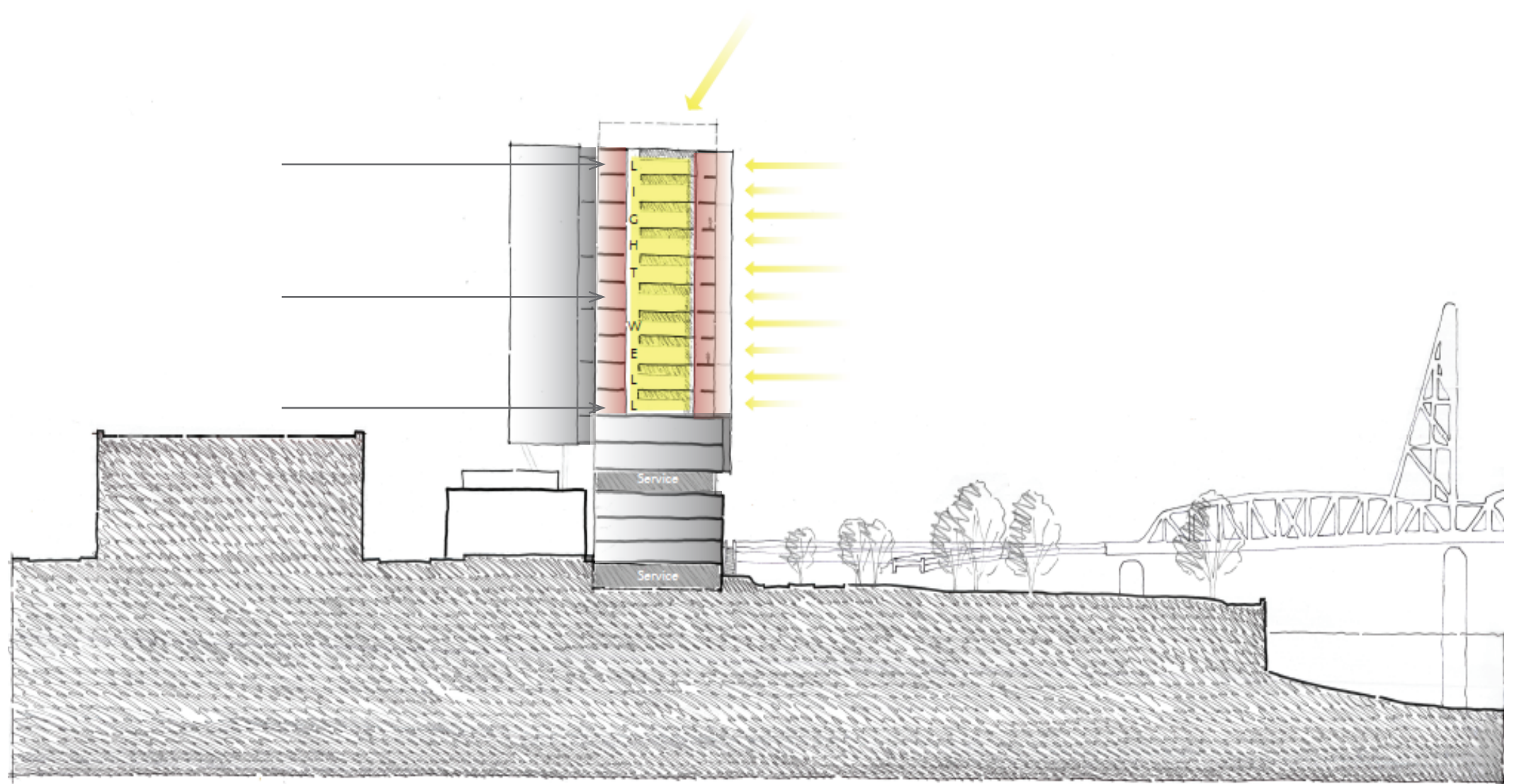
MULTNOMAH COUNTY COURTHOUSE

DAY LIGHT ANALYSIS

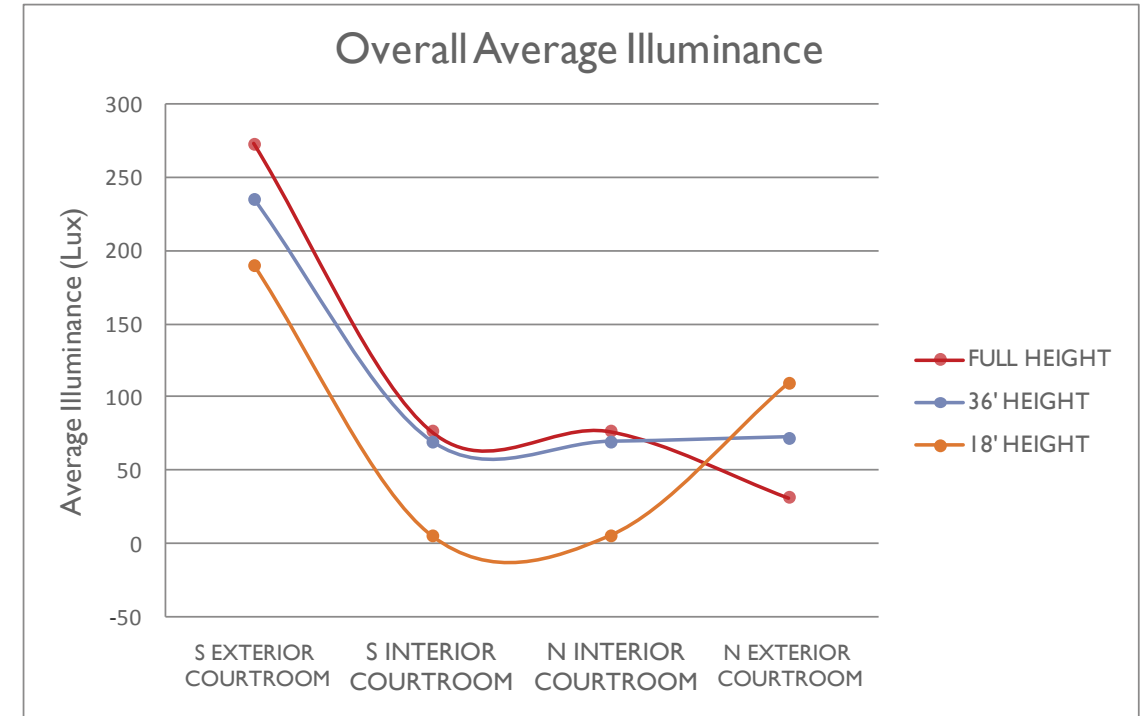
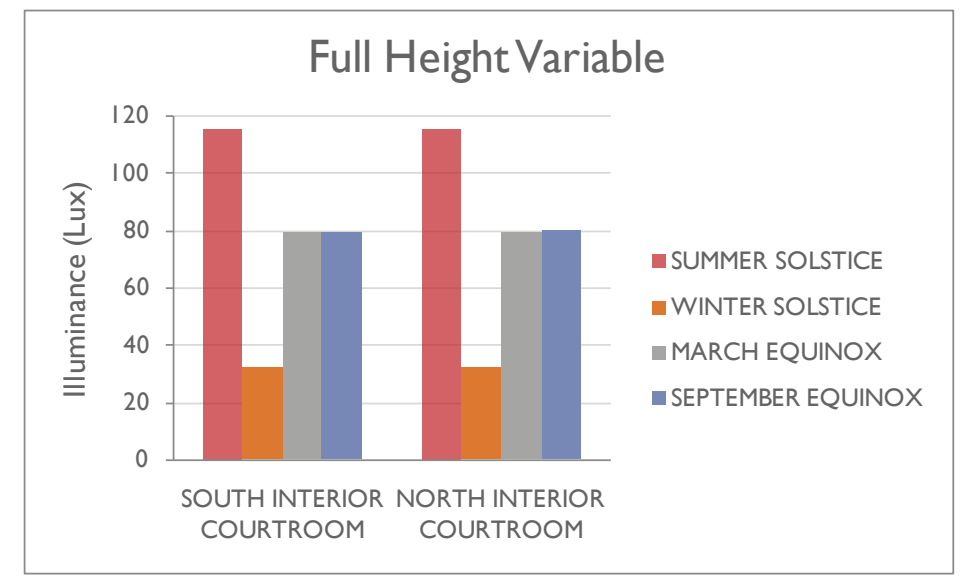
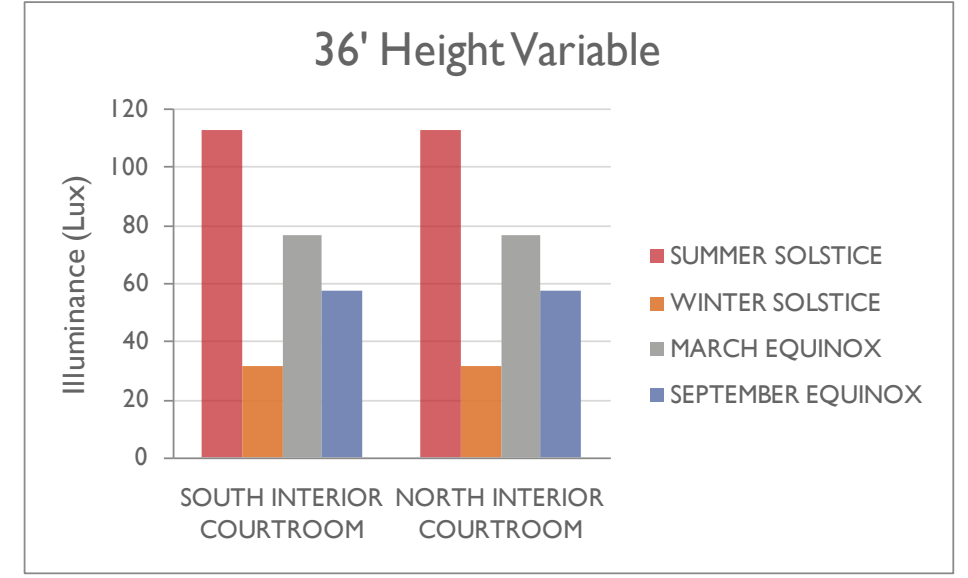
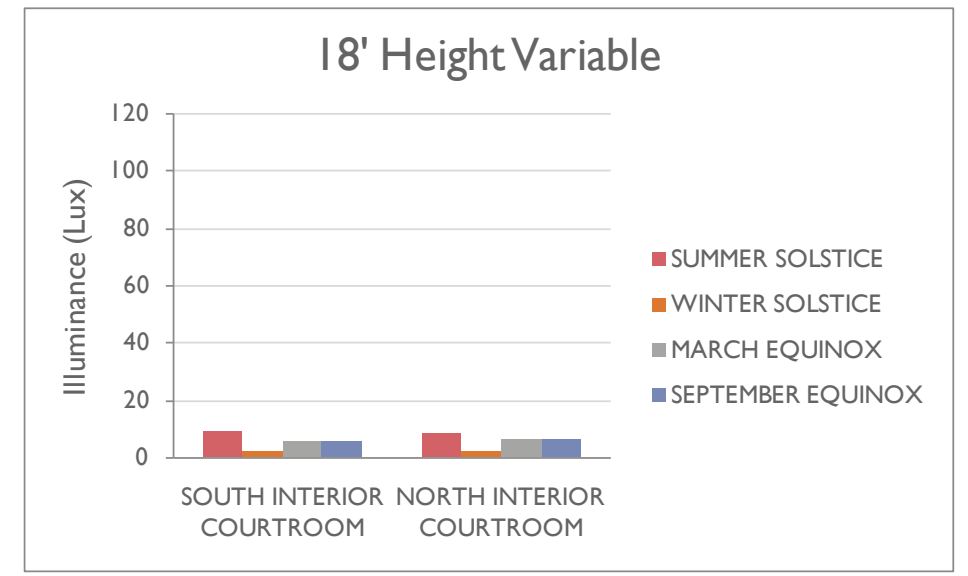
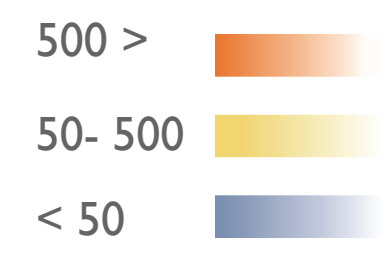
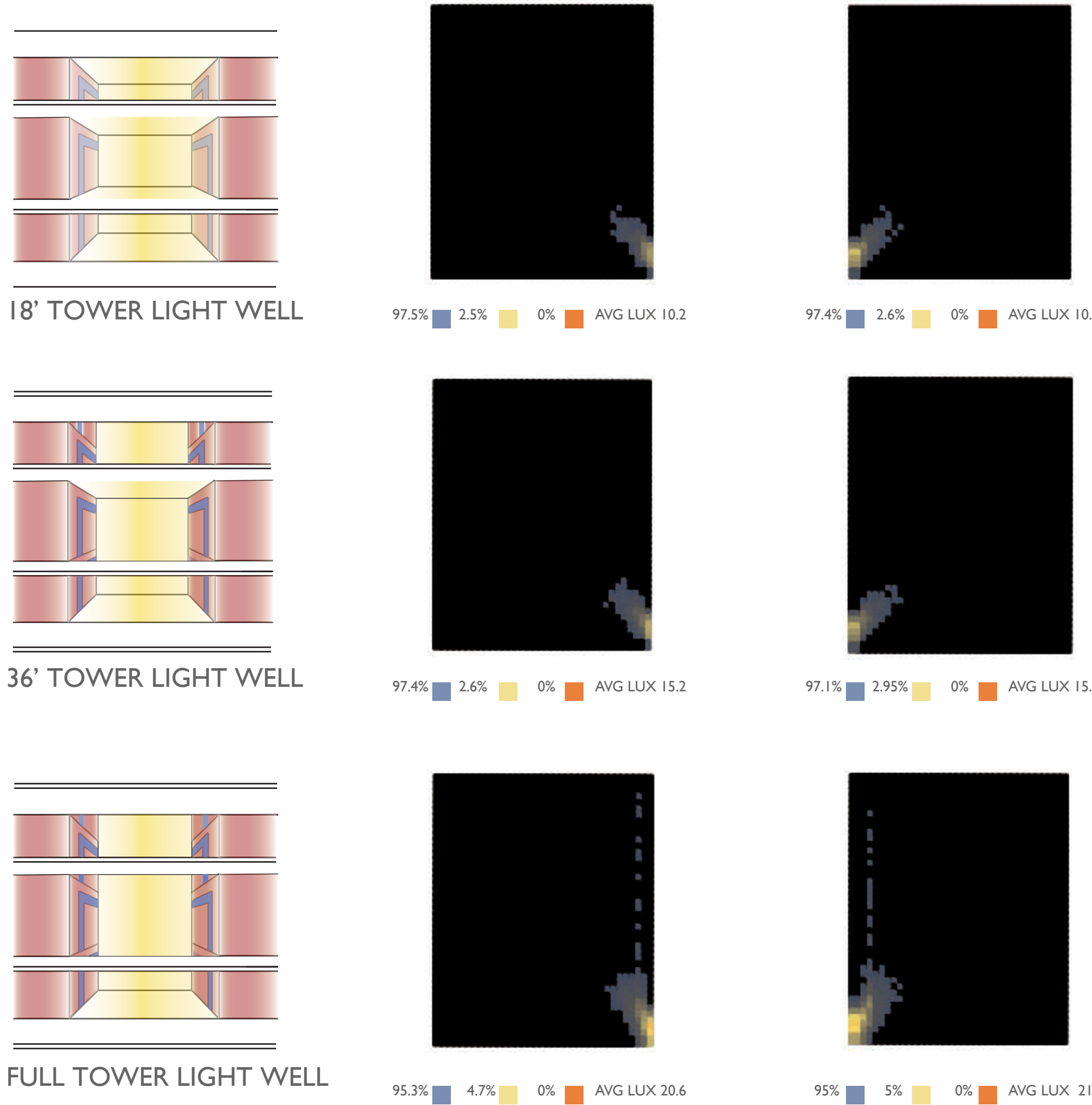
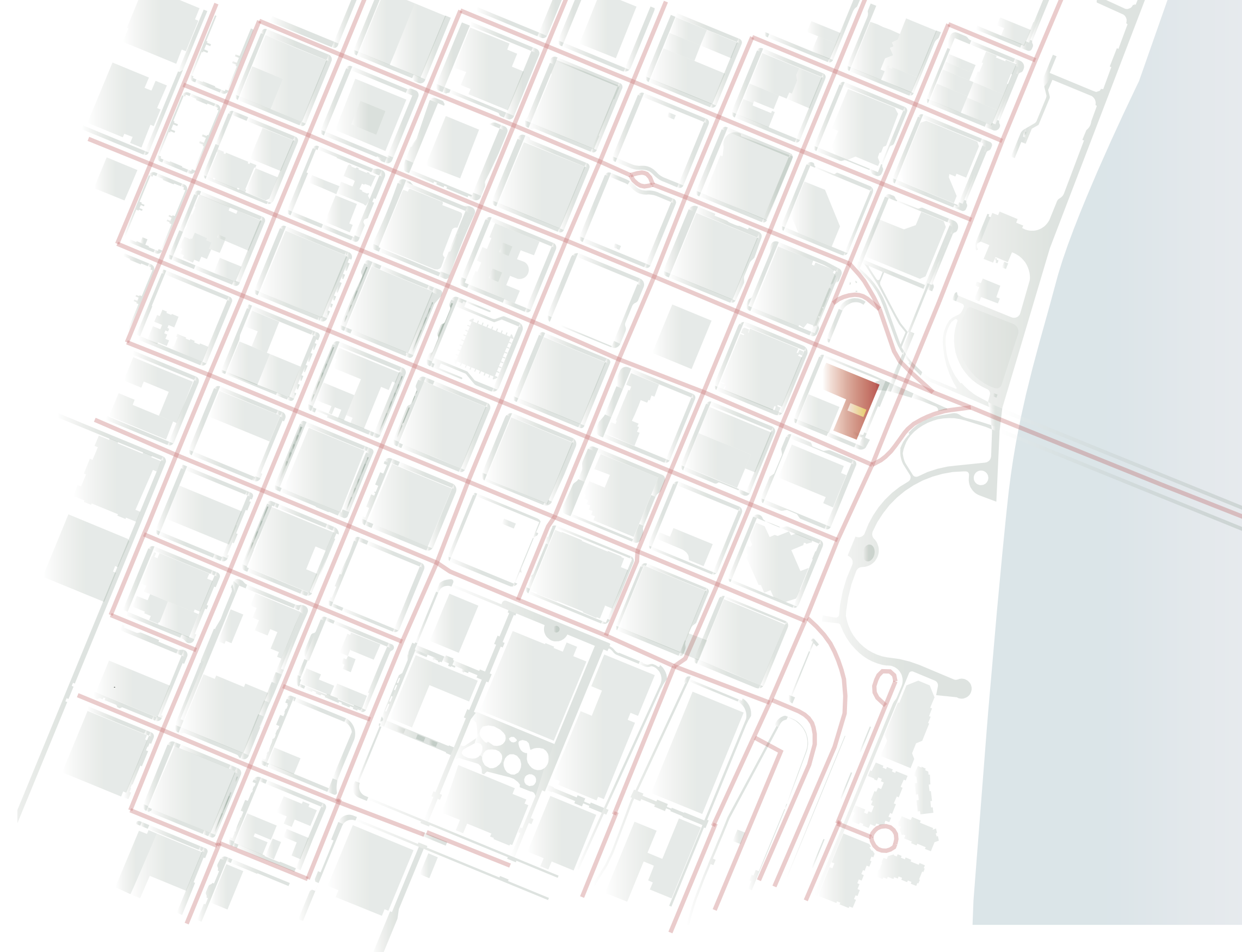
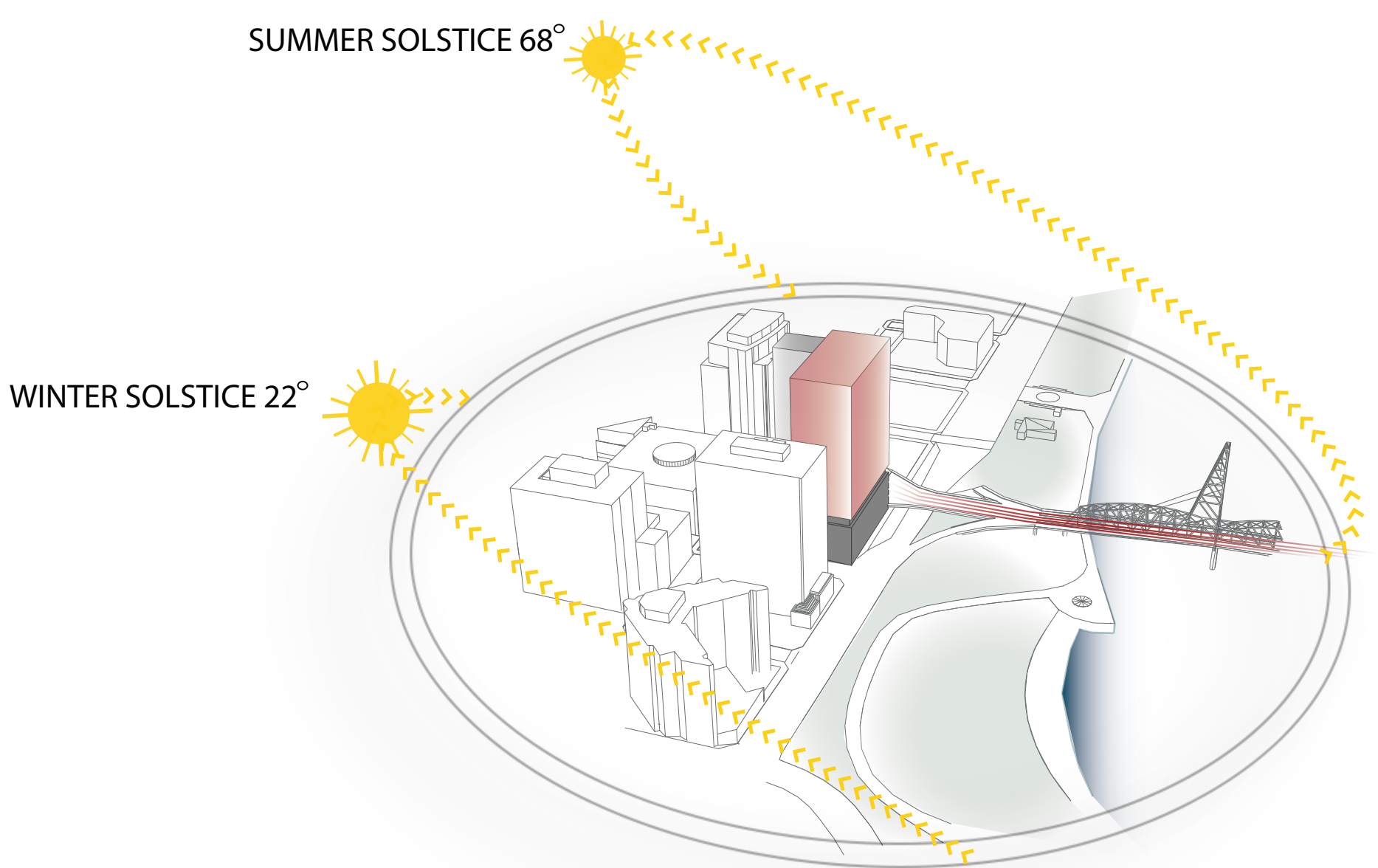
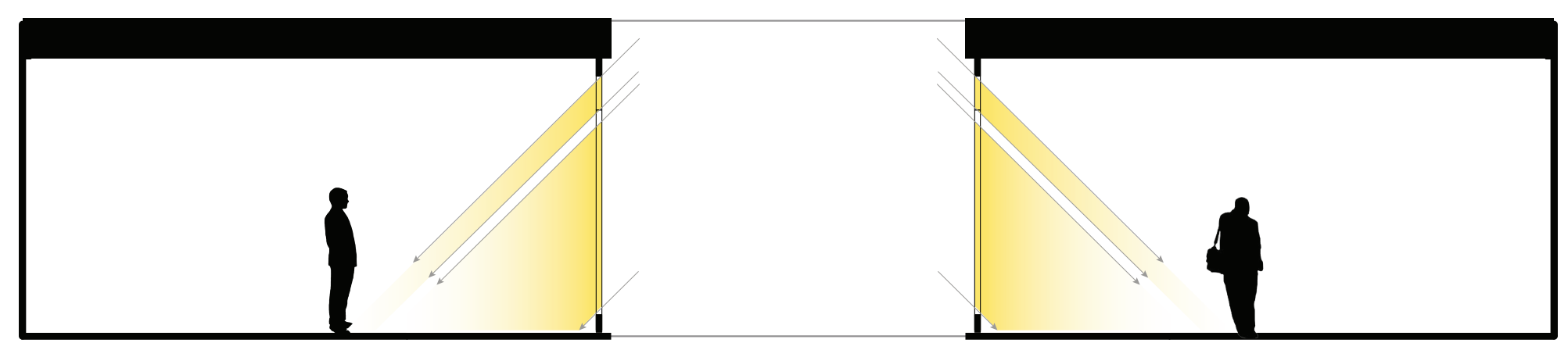
Matt Sedor, SRG, Jon Mehlschau, Project Architect, SRG, Scott Mooney, Architect, SRG
Lulwa Al-Bakri and Angela Van Duzen, PSU

PROJECT OVERVIEW
The project is a comprehensive day lighting analysis of spatial qualities to maximize daylight autonomy of the courtroom space for the Multnomah County. The courthouse is a new construction designed by SRG architects who are commissioned by Multnomah County. The building is located on 1st and Jefferson adjacent to the Hawthorne Bridge on Portland, OR.

The aim of the study is to determine whether a light well in the center of the tower is a viable solution to provide natural light into the courtrooms or not. The tests were conducted through digital models using Diva plug-in through Rhino as our day lighting analysis tool. The analysis includes specific variables that are examined. Among these would be the height, depth, and width of the light well as well as the placement and sizes of the courtroom windows. We examined the difference between having a full tower height light well or breaking it up into a 36' or 18' high light wells.



The average illuminance within the north and south interior courtrooms are approximately lit the same throughout a full tower height light well.



Our day lighting research has led us to the conclusion that the minimum level of daylight within a room should be 50 Lux. After conducting a thorough study of the amount of natural light the light well would bring into the courtrooms. Our recommendation would be the 36' high light well. The average illuminance between the full height and the 36' high light well was somewhat close. However, the difference is not very significant that is why going with the 36' high is still beneficial.