

PS3 Achieve Reverberation Time Thresholds

Technical Document (Individual)

WELL Performance Rating™, Q4 2022 Addenda








WHAT IS THIS DOCUMENT:

This document is intended to serve as a guide on how to create a **technical document to design spaces in accordance with reverberation times that support speech intelligibility, vocal effort and are conducive to concentration.**

This document and similar tools are intended to assist projects in their pursuit of the WELL Performance Rating™ but use of this document and/or similar tools are in no way a guarantee of achievement of any rating or designation, and no representation or warranty is made regarding the likelihood of achieving any rating or designation.

Note: The below document is based on the Q4 2022 addenda of the WELL Performance Rating™. Project teams are required to implement the feature requirements from the addenda version assigned to their project or any more recent addenda version.

HOW TO USE THIS DOCUMENT:

- ☐  Read the [below feature requirements](#) (or the feature requirements from the [addenda version assigned to your project](#), as relevant) and determine how your project addresses each requirement.
 - a. If your project is a WELL Core project, read through and ensure that your project follows the “WELL Core Guidance.”
 - b. Make sure to apply the feature requirements appropriate to your project’s space types. For example, if your project has both dwelling units and other space types, ensure your project is applying the requirements under “For Dwelling Units” to the dwelling unit spaces and applying the requirements under “For All Spaces except Dwelling Units” to the other space types. Check out the [WELL Performance Rating™ digital standard](#) for the exact language on your project’s space types.
- ☐  Refer to the [below example document](#) to get an idea of how to set up your documentation.
- ☐  Collaborate with your stakeholders to gather the [relevant documentation](#) that demonstrates the project’s compliance with the feature. Some examples of relevant documentation include:
 - a. a letter from a hired professional outlining services provided
 - b. the project’s floor plans
 - c. a modeling report
- ☐  Create a technical document using existing documentation where relevant, annotating it to clarify where feature requirements are met. Some examples of annotating include:
 - a. highlight the sections relevant to WELL requirements
 - b. circle or add boxes around particular data
 - c. add notes to confirm WELL requirements
 - d. add labels to draw attention to particular sections
 - e. provide an explanation of the connection to WELL requirements using a different colored font
 - f. check out the [WELL Documentation Annotation Guide](#) for more
- ☐  Name the document so that it is easily identifiable. Some examples for naming include:
 - a. name the document using the WELL feature code
 - b. name the document using the WELL feature name
 - c. name the document using the WELL document type
- ☐  Review the document you’ve created and ensure that all the necessary WELL requirements are fully and clearly addressed.
 - a. Note: the level of detail is up to the discretion of the project team, but the document must include specific details demonstrating that the actual requirements have been enacted in the project boundary. Features cannot be demonstrated solely through a written confirmation that the WELL requirements have been or will be implemented.
- ☐  Upload the document to the checklist in the WELL digital platform, after you’ve confirmed that the document fully and clearly addresses all the necessary WELL requirements.



FEATURE REQUIREMENTS:

For All Spaces Except Dwelling Units

For projects in which the space types listed in the table cumulatively make up at least 10% of occupiable project area, the following requirements are met:

- a. Reverberation time is within the ranges shown in the following table:

Room Type	Room Volume, v (cubic meters)	Reverberation Time, t (seconds)
Areas for learning	$v \leq 10,000 \text{ ft}^3 [280 \text{ m}^3]$	$t \leq 0.6$
Areas for lectures	$10,000 \text{ ft}^3 [280 \text{ m}^3] \leq v \leq 20,000 \text{ ft}^3 [570 \text{ m}^3]$	$0.5 \leq t \leq 0.8$
Areas for conferencing	$v \geq 20,000 \text{ ft}^3 [570 \text{ m}^3]$	$0.6 \leq t \leq 1.0$
Areas with regularly used PA systems	N/A	$t \leq 1.5$
Areas for dining	N/A	$t \leq 1.0$
Areas for fitness	$v \leq 10,000 \text{ ft}^3 [280 \text{ m}^3]$	$0.7 \leq t \leq 0.8$
	$10,000 \text{ ft}^3 [280 \text{ m}^3] \leq v \leq 20,000 \text{ ft}^3 [570 \text{ m}^3]$	$0.8 \leq t \leq 1.1$
	$v \geq 20,000 \text{ ft}^3 [570 \text{ m}^3]$	$1.0 \leq t \leq 1.8$

<i>Areas for music rehearsal</i>	$v \leq 10,000 \text{ ft}^3 [280 \text{ m}^3]$	$t \leq 1.1$
	$10,000 \text{ ft}^3 [280 \text{ m}^3] \leq v \leq 20,000 \text{ ft}^3 [570 \text{ m}^3]$	$1.0 \leq t \leq 1.4$

Note:

Where room types include multiple use types (e.g., learning and fitness) use the limits that include the lower reverberation time or range.

Refer to the Performance Verification Guidebook for information on sensor/testing requirements, required testing duration and compliance calculations.

WELL Core Guidance:

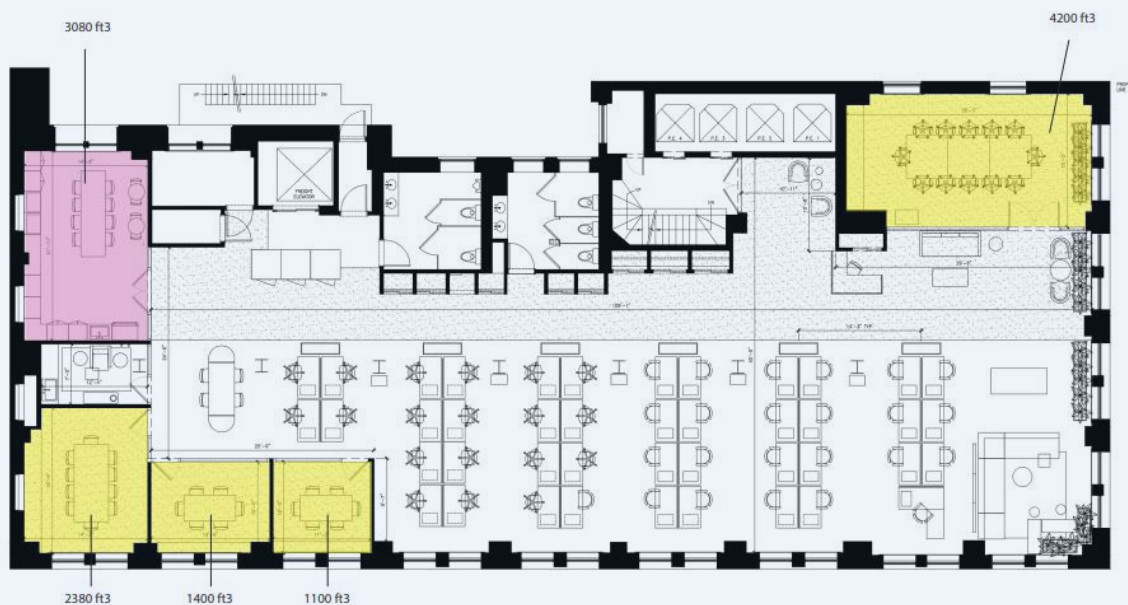
Meet these requirements in non-leased spaces. Projects may earn an Innovation feature for also meeting reverberation time in leased spaces. Alternatively, WELL Core projects where non-leased space represents 40% or more of total project area may pursue the additional Innovation feature without achieving the feature requirements in tenant spaces. Projects utilizing this pathway should include a note on the documentation required by the feature.

The below sample documentation is intended to provide guidance in creating a technical document. It is not a template. You may note included components that are not required to demonstrate compliance with this feature.

Example document for PS3 Achieve Reverberation Time Thresholds

For [PROJECT] our team conducted reverberation time tests in all relevant rooms in accordance with testing requirements from the [WELL Performance Verification Guidebook](#). Below is a floor plan that shows where we tested and is labeled in accordance with the relevant space types from feature S04 as applicable to this project:

- Areas for learning, lectures and conferencing
- Areas for dining



Total Volume = 120,000 ft³

Highlighted Volume = 12,160 ft³ (10.1%)

All testing area was furnished: Yes

Mechanical systems were balanced and operating: Yes

Sound masking, where present, was on: Yes

Floorplate was unoccupied or close to unoccupied during testing: Yes

Number of testing agents performing test in each relevant room: One testing agent per test, per room

Sound source used for testing: Omnidirectional loudspeaker with external signal generator

The following table details our measured reverberation time values taken from each space:

Reverberation Time tests:

Room Name	Reverberation Time (seconds)
Conference Room 1	0.8
Conference Room 2	0.6
Conference Room 3	0.55
Dining Area	1.1

TIPS FOR MULTIPLE LOCATIONS

- For organizations pursuing the WELL Performance Rating for multiple locations, a technical document must be submitted for each project pursuing this feature part; it is not considered shareable.