

Earthquake Event: _____ | Questionnaire #: _____ | Administrator ID: _____

EERI Housner Fellows

Functional Recovery Questionnaire

PART 1 (QUESTIONS TO BE ANSWERED BY THE RESPONDENT)

Start time

1. Start time of Questionnaire Part 1 (in military time, hour/minute): _____

Respondent Information

2. What is your role for the building (e.g., owner, manager, occupant)? _____
3. What is the street address of this building? _____
4. What is your email address (optional)? _____

Overall status of safety, functionality, use, occupancy, and accessibility

5. Approximately what year was the building constructed? _____
6. Has the building been retrofitted? If yes, when, and how? _____
7. What is the main use (occupancy type) of this building? (e.g., mixed-use commercial and residential, police station, grocery store) _____
8. What was the initial building safety tag (if applicable)? *Select one.*
- a. ☐ Green (Inspected)
 - b. ☐ Yellow (Restricted Use)
 - c. ☐ Red (Unsafe)
 - d. ☐ Assessed but not using ATC-20 style green/yellow/red tagging system. What was used instead? _____
 - e. ☐ N/A - Not tagged

9. *(If a residential building)* Is the building currently being used solely as a shelter? *Select one.*

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

10. To what degree is the building currently functional (or, in use as intended)? *Select one.*

- a. ☐ Fully functional (it was always functional) - *SKIP TO 63 (PART 2)*
- b. ☐ Fully functional (it was non-functional for a time and is now back to the way it was)
- c. ☐ Partially functional (*explain*)

- d. ☐ Not functional (or, in use) – *SKIP TO 13*

11. How long did it take for the building to regain function to its current degree? *Select one. Round to nearest increment.*

- a. Number of months: _____
- b. Number of weeks: _____
- c. Number of days: _____
- d. Number of hours: _____

12. Why did the building (or tenant space) lose function? *Check all that apply.*

- a. ☐ Unsafe due to structural damage
- b. ☐ Unsafe due to falling hazards
- c. ☐ Lack of accessibility (e.g., stairs, elevators, doors, corridors, and/or egress non-functional)
- d. ☐ Issues with utility systems internal to the building (e.g., mechanical, electrical, plumbing, communication, data)
- e. ☐ Lack of external utility service(s) to the building (e.g., water supply, sewer, gas, communication, data)
- f. ☐ Issues with the quality of external utility service(s) to the building (e.g., low water quality; low water pressure; electric voltage issues)
- g. ☐ Damage to architectural systems (e.g., ceilings; interior partitions; cladding)
- h. ☐ Damage to contents that are critical to function (e.g., equipment)
- i. ☐ Damage to buildings in the surrounding neighborhood posing safety hazard to the building
- j. ☐ Cordoning in the area limiting access to the building
- k. ☐ Perception of tenants that the building is unsafe
- l. ☐ Other (*describe*) _____

Functionality Check

13. Which of the following systems, if any, lost function after the earthquake? *Select all that apply. Note if loss of functionality is partial/limited to a specific area of the building.*

- a. ☐ Electric _____
- b. ☐ Water supply _____
- c. ☐ Sewer _____
- d. ☐ HVAC _____
- e. ☐ Fire Sprinkler _____
- f. ☐ Stairs _____
- g. ☐ Elevators _____
- h. ☐ Internet/communications _____

Questions 14-39: Answer only for the systems selected in 13, above.

14. How long did it take the **electrical system** to be functional?

___ months ___ weeks ___ days ___ hours ___ Still non-functional

15. Did failure of the electrical system affect the ability of the tenants to use the building?

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

16. What caused electrical systems to stop functioning? (e.g., failure of transformer, switchgear, or distribution panel; external power-grid failure; failure of backup power system)

17. How long did it take the **water supply** system to be functional?

___ months ___ weeks ___ days ___ hours ___ Still non-functional

18. Did failure of the water supply system affect the ability of the tenants to use the building?

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

19. What caused water and plumbing to stop functioning? (e.g., damage to piping or external service failure)

20. How long did it take the **sewer system** to be functional?

___ months ___ weeks ___ days ___ hours ___ Still non-functional

21. Did failure of the sewer system affect the ability of the tenants to use the building?

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

22. What caused the sewer system to stop functioning? (e.g., damage to piping or external service failure)

23. How long did it take the **HVAC** system to be functional?

___ months ___ weeks ___ days ___ hours ___ Still non-functional

24. Did failure of the HVAC system affect the ability of the tenants to use the building?

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

25. What caused the HVAC system to stop functioning? (e.g., failure of heating system, cooling system, electrical power, HVAC distribution system(s), exhaust system)

26. How long did it take the **fire sprinkler** system to be functional?

____ months ____ weeks ____ days ____ hours ____ Still non-functional

27. Did failure of the fire sprinkler system affect the ability of the tenants to use the building?

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

28. What caused the fire sprinkler system to stop functioning? (e.g., lack of power)

29. How long did it take the **stairs** to be functional?

____ months ____ weeks ____ days ____ hours ____ Still non-functional

30. Did failure of the stairs affect the ability of the tenants to use the building?

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

31. What caused the stairs to not be functional? (e.g., collapse, debris, mold).

32. How many **elevators** are in the building? _____ Of those, how many lost functions? _____

33. Of those that lost function, how long did it take for at least one elevator to be functional? (*Not applicable if at least one elevator remained functional*)

____ months ____ weeks ____ days ____ hours ____ Still non-functional

34. For buildings with multiple elevators, of those that lost function, how long did it take for all elevators to be functional?

____ months ____ weeks ____ days ____ hours ____ Still non-functional

35. Did failure of the elevators affect the ability of the tenants to use the building?

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

36. What caused the elevators to stop functioning? (e.g., damage to the elevator, motor control center failure; electrical system failure or loss of power supply)

37. How long did it take the **internet/communication systems** to be functional?

____ months ____ weeks ____ days ____ hours ____ Still non-functional

38. Did failure of the internet/communication systems affect the ability of the tenants to use the building?

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

39. What caused the internet/communication systems to not be functional?

40. How long did it take for each of the following **external** utilities serving the building to become functional?

a. External power grid:

____ months ____ weeks ____ days ____ hours ____ Still non-functional

b. External water supply:

____ months ____ weeks ____ days ____ hours ____ Still non-functional

c. External sewer:

____ months ____ weeks ____ days ____ hours ____ Still non-functional

d. Data/communication:

____ months ____ weeks ____ days ____ hours ____ Still non-functional

e. External gas:

____ months ____ weeks ____ days ____ hours ____ Still non-functional

41. What other factors hindered functionality? *Select all that apply.*

a. ☐ Lack of transportation to access to the building (road, bridges)

b. ☐ Electric voltage issue

c. ☐ Lack of potable (drinking) water

d. ☐ Low water pressure (affecting fire protection or other need)

e. ☐ Other water quality issues (*describe*) _____

f. ☐ Other (*describe*) _____

Architectural Components and Building Contents

42. Which of the following architectural components or building contents experienced damage? *Check all that apply. Please describe the severity and location of damage and note if loss of functionality is partial/limited to a specific area of the building.*

Exterior architectural components

- a. ☐ Facade (cladding or veneer) _____
- b. ☐ Parapet _____
- c. ☐ Windows or Glazing _____

Interior architectural components

- d. ☐ Ceilings _____
- e. ☐ Lighting _____
- f. ☐ Interior walls (partitions) _____

Furniture and contents

- g. ☐ Shelving/cabinetry _____
- h. ☐ Appliances _____
- i. ☐ Special equipment (*describe*) _____
- j. ☐ Contents containing hazardous materials _____
- k. ☐ Other (*describe*) _____

Questions 43-48: Answer only for the components selected in 42, above.

43. Did failure of the **exterior architectural components** affect the ability of the tenants to use the building? (please explain)

44. How long did it take for the exterior architectural components to be repaired such that tenants can use the building?

- a. Facade: _____ months _____ weeks _____ days _____ hours _____ Still non-functional
- b. Parapet: _____ months _____ weeks _____ days _____ hours _____ Still non-functional
- c. Windows or Glazing: _____ months _____ weeks _____ days _____ hours _____ Still non-functional

45. Did failure of the **interior architectural components** affect the ability of the tenants to use the building? (please explain)

46. How long did it take for the interior architectural components to be repaired such that tenants can use the building?

- a. Ceiling: _____ months _____ weeks _____ days _____ hours _____ Still non-functional
- b. Lighting: _____ months _____ weeks _____ days _____ hours _____ Still non-functional
- c. Interior walls (partitions):
_____ months _____ weeks _____ days _____ hours _____ Still non-functional

47. Did failure of the **furniture or contents** affect the ability of the tenants to use the building? (please explain)

48. How long did it take for the furniture or contents to be repaired such that tenants can use the building?

- a. Shelving/cabinetry: _____ months _____ weeks _____ days _____ hours _____ Still non-functional
- b. Appliances: _____ months _____ weeks _____ days _____ hours _____ Still non-functional
- c. Special equipment: _____ months _____ weeks _____ days _____ hours _____ Still non-functional
- d. Contents containing hazardous materials:
_____ months _____ weeks _____ days _____ hours _____ Still non-functional

Repair and Impeding Factors

49. Is there a plan to repair the building (structural and/or nonstructural)? *Select one.*

- a. ☐ Yes – *SKIP TO 51*
- b. ☐ No
- c. ☐ I don't know – *SKIP TO 59*

50. If no, explain why there is no plan to repair the building. - *THEN SKIP TO 59*

51. If yes, what systems will be/are being repaired? *Select all that apply.*

- a. ☐ Structure
- b. ☐ Foundation
- c. ☐ HVAC
- d. ☐ Electric
- e. ☐ Water supply
- f. ☐ Sewer
- g. ☐ Cladding/parapets/exterior appendages/veneer
- h. ☐ Ceilings
- i. ☐ Elevators
- j. ☐ Sprinkler
- k. ☐ Stairs
- l. ☐ Partition walls
- m. ☐ Nonstructural system not listed (*explain*) _____
- n. ☐ Other (*explain*) _____
- o. ☐ I don't know

52. Can the building be cleaned up and become at least partially functional before repairs are completed?

Select one.

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

53. Is/was a permit from the building department or some other government entity needed to make repairs?

Select one.

- a. ☐ Yes
- b. ☐ No
- c. ☐ I do not know

54. Have structural and/or nonstructural repairs started yet? *Select one.*

- a. ☐ Yes – they have started
- b. ☐ Yes – they have started and completed
- c. ☐ No – they have not started – *SKIP TO 58*

55. When did/will the repairs start and end for any damaged systems? *Check projected or actual for both the start and end dates.*

- a. System name: _____
 - i. ☐ Start date: _____ ☐ Projected; ☐ Actual
 - ii. ☐ End date: _____ ☐ Projected; ☐ Actual
- b. System name: _____
 - i. ☐ Start date: _____ ☐ Projected; ☐ Actual
 - ii. ☐ End date: _____ ☐ Projected; ☐ Actual

c. System name: _____

i. ☐ Start date: _____ ☐ Projected; ☐ Actual

ii. ☐ End date: _____ ☐ Projected; ☐ Actual

d. System name: _____

i. ☐ Start date: _____ ☐ Projected; ☐ Actual

ii. ☐ End date: _____ ☐ Projected; ☐ Actual

e. System name: _____

i. ☐ Start date: _____ ☐ Projected; ☐ Actual

ii. ☐ End date: _____ ☐ Projected; ☐ Actual

f. System name: _____

i. ☐ Start date: _____ ☐ Projected; ☐ Actual

ii. ☐ End date: _____ ☐ Projected; ☐ Actual

56. Were there any delays in starting or conducting the repairs? *Select one.*

a. ☐ Yes

b. ☐ No – *SKIP TO 58*

c. ☐ I don't know – *SKIP TO 58*

57. What has caused the delays? *Select all that apply.*

- a. ☐ Financing
- b. ☐ Access to materials
- c. ☐ Engineering mobilization
- d. ☐ Lack of skilled workers to do the repairs
- e. ☐ Permitting
- f. ☐ Other buildings were deemed a higher priority than this building
- g. ☐ Other (*describe*) _____

58. What financial resources are being used to pay for the repairs? *Select all that apply.*

- a. ☐ Government financial support
- b. ☐ Insurance coverage
- c. ☐ Individual building owner funds
- d. ☐ Loan
- e. ☐ Philanthropic funds
- f. ☐ Other (*describe*) _____

59. Is there a plan to demolish the building? *Select one.*

- a. ☐ Yes
- b. ☐ No – *SKIP TO 61*
- c. ☐ I don't know - *SKIP TO 61*

60. Why is the building being demolished?

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61. Is there anything you would like to share about the post-earthquake function of the building that was not covered by previous questions? *For example, if the building was damaged, were any special adaptations made to allow restoration of function before repairs?*

62. End time of Questionnaire Part 1 (in military time, hour/minute): _____

END OF PART 1 (QUESTIONS FOR RESPONDENT)

PART 2 (QUESTIONS TO BE ANSWERED BY THE ADMINISTRATOR)

Start time

63. Start time of Questionnaire Part 2 (in military time, hour/minute): _____

General Questions

64. Today's date (DD/MM/YYYY): _____

65. Building ID: _____

66. Building's approximate square feet: _____

67. Number of stories _____

68. How many stories above/below ground? _____

Building Structural/Geotechnical Damage

69. Is the building or a story visibly leaning? *Select one.*

- a. ☐ No
- b. ☐ Yes
- c. ☐ I don't know

70. Which of the following structural components have moderate or greater observable damage? *Briefly describe the primary type of damage for any checked component.*

- a. ☐ Columns: _____
- b. ☐ Shear walls: _____
- c. ☐ Steel braces: _____
- d. ☐ Roofs, floors, diaphragms: _____
- e. ☐ Floor-to-wall connections: _____
- f. ☐ Foundation: _____
- g. ☐ Other: _____

71. Is there geotechnical damage (e.g., slope failure, ground movement, fissures) at the building site? *Select one.*

- a. ☐ Yes (*describe*) _____
- b. ☐ No
- c. ☐ I don't know

Buildings with Plans to be Demolished

Skip to 74 if there are no plans to demolish the building or if the building has already been demolished.

72. Can the structural damage be practically repaired instead of demolishing the building? *Select one.*

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

73. Can the nonstructural damage be practically repaired instead of demolishing the building? *Select one.*

- a. ☐ Yes
- b. ☐ No
- c. ☐ I don't know

General

74. What was the primary cause of building damage? *Select one.*

- a. ☐ Earthquake shaking
- b. ☐ Tsunami
- c. ☐ Landslide
- d. ☐ Fire
- e. ☐ Other (*describe*) _____

75. What is the structural system type? *Select one.*

- a. ☐ Concrete moment frame without masonry infill
- b. ☐ Concrete moment frame with masonry infill
- c. ☐ Concrete shear wall
- d. ☐ Light metal frame (cold-formed steel)
- e. ☐ Light wood frame
- f. ☐ Manufactured housing
- g. ☐ Precast concrete tilt-up
- h. ☐ Precast concrete frame
- i. ☐ Reinforced masonry
- j. ☐ Steel moment frame
- k. ☐ Steel braced frame
- l. ☐ Unreinforced masonry
- m. ☐ Other _____
- n. ☐ Unknown (*Where possible, check the most likely type(s) in addition to this option*)

76. What means of data collection were used to complete this questionnaire? *Select all that apply.*

- a. ☐ Communication with Owner
- b. ☐ Communication with Occupant(s)
- c. ☐ Examination of building exterior
- d. ☐ Examination of building interior
- e. ☐ Review of building drawings
- f. ☐ Other (*describe*)

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77. Do you recommend follow-up study of this building? *Select one.*

- a. ☐ I don't know
- b. ☐ No
- c. ☐ Yes (*explain why and when you recommend that the follow-up occur in terms of months from the date of this questionnaire*)

78. End time of Questionnaire Part 2 (in military time, hour/minute): _____

END OF PART 2 (QUESTIONS FOR ADMINISTRATOR)