



# **CLARK SHAFT EVALUATION ADDENDUM**

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# 1 INTRODUCTION

WSP was hired to assist with the survey and evaluation of the shafts at the Clark building for compliance with the 2012 (now 2015) Life Safety Code (LSC). Surveys began in November 2015 and a report detailing deficiencies was issued in November 2016. This document is an addendum to the report issued in November, and intends to provide additional detail for the noted deficiencies.

The current state of the rated construction for the Clark Shafts does not meet the requirements of the LSC nor its reference documents. Both the existing Total Shaft Enclosure (TSE) and Shaft Subdivision walls must be repaired, and additional Shaft Subdivisions must be provided to adequately separate the environmental air from other services, as required by NFPA 90A.

# 2 FINDINGS & RECOMMENDATIONS

The findings and recommendations below describe both Total Shaft Enclosure and Shaft Subdivision deficiencies. Shaft Subdivision wall findings and recommendations include subdivision walls both between large chases and pipe chases. Figure 1 below provides an example floor to illustrate the language used in this report include TSE, SS, Pipe Chase, and Large Chase.

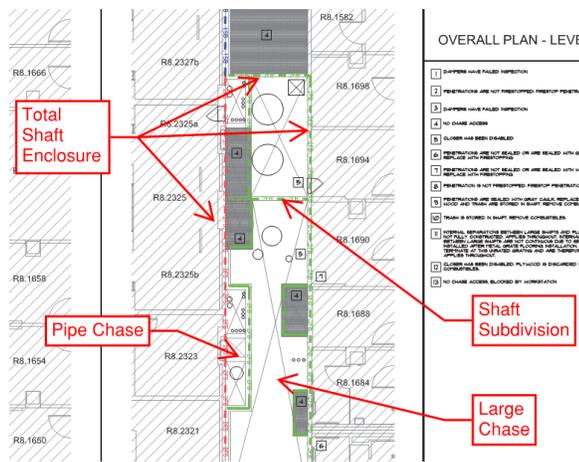


Figure 1

The list of deficiencies noted are included in this section below. This list is repeated in Section 3 of this report, but in tabular format to indicate whether the comment applies to the TSE construction, SS construction, or “Other.” Locations of specific deficiencies are included in Appendix A.

## 2.1 LEVEL 1

- 1 Hatch is listed for horizontal use, not vertical. Replace hatch in TSE wall with appropriately listed hatch.
- 2 Conduit penetration is not firestopped. Firestop penetration in TSE wall to maintain rating.
- 3 Plywood framing is installed behind ductwork. Replace framing in TSE wall with non-combustible framing. Conduit not filled with firestopping. Fill conduit with firestopping in TSE wall to maintain rating.
- 4 Comment removed.
- 5 Comment removed.



- 6 Fire damper failed inspection in 2015 and is not provided with an access hatch. Additional information from MD Anderson indicates that two fire dampers failed inspection at this location due to no access panel, and two smoke dampers did not close upon fire alarm activation. Provide access panels to allow for proper access for inspection, testing and maintenance of TSE wall dampers. Repair, test and inspect dampers in TSE wall.
- 7 Multiple penetrations are not sealed or are sealed with white caulk. Remove white caulk and seal penetrations with firestopping in Shaft Subdivision wall.  
Hatch is equipped with a spring, but the spring is not strong enough for the hatch to be self-closing. Install spring in hatch so the hatch is self-closing-to-latch in Shaft Subdivision wall.
- 8 Comment removed.
- 9 Pipe penetration is not firestopped. Seal pipe penetration with firestopping in TSE wall.
- 10 Comment removed.
- 11 Floor pipe penetrations are not firestopped. Firestop floor pipe penetrations.
- 12 Floor pipe penetrations are not firestopped. Firestop floor pipe penetrations.
- 13 Floor pipe penetrations are not firestopped. Firestop floor pipe penetrations.
- 14 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating.  
The TSE wall construction in the pipe chase is damaged throughout pipe chases. Repair TSE wall construction to maintain rating.
- 15 Hatch is equipped with a spring, but the spring is not strong enough for the hatch to be self-closing. Install spring on hatch so it is self-closing to latch in TSE wall.
- 16 The wall construction in the pipe chase separating it from the larger chase is damaged. Repair Shaft Subdivision wall construction between the pipe chase and the large chase to maintain rating.
- 17 If hatch latches behind an occupant, it requires special knowledge to get out of the shaft. Replace hatch hardware so it does not require special knowledge or tools to open.
- 18 Conduit is sealed with foam, not firestopping. Remove foam and seal conduit with firestopping in TSE wall.
- 19 CMU joint in shaft construction is not firestopped. Joint is approximately 1 in. wide. Repair CMU joint to maintain rating in TSE wall.
- 20 Comment removed.
- 21 Penetrations between the two shafts (pipe chase and large chase) are not sealed and the two shafts communicate. Seal penetrations in Shaft Subdivision wall between the pipe chase and large chase to maintain rating.
- 22 Shaft construction is compromised and is not separated from office space. Repair shaft construction to maintain rating in TSE wall.
- 23 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)
- 24 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

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## 2.2 LEVEL 2

- 1 Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 2 Shaft construction terminates at the underside of steel beam equipped with structural fireproofing (SFRM). However, bottom of beam is not provided with SFRM. Complete SFRM installation on the beam at TSE wall.



- 3 Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 4 Penetrations are sealed with white caulking. Remove white caulking and seal penetrations with firestopping in TSE wall.
- 5 Rated Shaft Subdivision construction terminates at the metal grating used as flooring at the bottom and at unprotected beams at the top. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation.
- 6 Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 7 Hatch installation is damaged. Repair hatch assembly in Shaft Subdivision wall.
- 8 Rubbish and plywood stored in shaft. Remove combustible materials from shafts.
- 9 Inaccessible hatch is propped open with newspaper. Remove prop and ensure hatch is self-closing to latch in TSE wall.
- 10 Penetrations and joints are sealed with white caulking in shaft construction throughout the floor. Remove white caulking material in rated TSE walls and replace with firestopping.  
Penetrations and joints are sealed with white caulking in shaft construction throughout the floor. Remove white caulking material in rated Shaft Subdivision walls and replace with firestopping.
- 11 Access hatch does not close to latch. Repair hatch so it closes to latch in TSE wall.
- 12 Penetrations are sealed with white caulk. Remove material and replace with firestopping in TSE wall.
- 13 Damper was last inspected in 2004. Additional information from MD Anderson indicates the fire damper failed inspection and will require installation of access panels to allow for testing. Install access panels for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.
- 14 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)  
The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)
- 15 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

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## 2.3 LEVEL 3

- 1 Fire damper has failed inspection. Additional information from MD Anderson indicates two smoke dampers are blocking access to two fire dampers. Provide access and/or modify existing design to allow proper access for, inspection, testing and maintenance of dampers in TSE wall. Inspect and test dampers in TSE wall.
- 2 Shaft construction is damaged. Repair TSE shaft wall construction to maintain rating.
- 3 Hatch is not self-closing. Repair closer and ensure hatch is self-closing to latch in TSE wall.
- 4 Access hatch is obstructed by light fixture. Move light fixture so hatch is not obstructed.
- 5 Comment removed.
- 6 Hatch is not self-closing. Add closer or repair hatch so it is self-closing to latch in TSE wall.
- 7 Penetrations are sealed with gray caulking. Remove gray caulking and seal penetrations with firestopping in Shaft Subdivision wall.
- 8 Shaft is being used to store combustible trash/storage. Remove combustible materials from shafts.
- 9 Damper failed inspection. Repair, inspect and test damper in TSE wall.
- 10 Multiple penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.



- 11 Fire damper cannot be accessed for inspection. Ceiling has a hard lid with no access on one side, and the duct is insulated on the other. Install access panels for proper inspection, testing and maintenance of dampers in TSE wall. Test and inspect damper in TSE wall.
- 12 Penetrations are sealed with gray caulking. Remove gray caulk and seal penetrations with firestopping in TSE wall.
- 13 Large hole in Shaft Subdivision connects two large shafts. Repair construction of Shaft Subdivision wall to maintain rating.
- 14 Spray applied fire resistive material has been knocked off the structure. Repair spray applied fire resistive material.
- 15 Shaft is being used to store trash. Remove combustible materials from shafts.
- 16 Multiple penetrations are not firestopped. Firestop penetrations in TSE wall. Shaft construction is damaged. Repair TSE wall construction to maintain rating.
- 17 Multiple penetrations are not firestopped. Firestop penetrations in TSE wall. Shaft construction is damaged. Repair TSE wall construction to maintain rating.
- 18 Hatch is not self-closing. Repair hatch and ensure the hatch is self-closing to latch in TSE wall.
- 19 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)
- 20 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)  
The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)
- 21 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

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## 2.4 LEVEL 4

- 1 Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 2 Penetrations are sealed with white caulking instead of firestopping throughout the area. Remove white caulking and replace with firestopping to maintain TSE wall rating.
- 3 Shaft is being used to store plywood. Remove combustible materials from shafts.
- 4 Trash is being stored throughout shafts on this floor. Remove combustible materials from shafts.
- 5 Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 6 Penetration is not firestopped. Firestop Shaft Subdivision pipe chase wall penetrations to maintain rating.
- 7 Multiple penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.
- 8 Multiple penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.
- 9 Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 10 Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.  
Construction is damaged. Applies throughout floor. Repair TSE shaft wall construction throughout floor to maintain rating.



Construction is damaged. Applies throughout floor. Repair Shaft Subdivision walls throughout floor to maintain rating.

- 11 Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.

Construction is damaged. Applies throughout floor. Repair TSE wall construction throughout floor to maintain rating.

Construction is damaged. Applies throughout floor. Repair Shaft Subdivision walls throughout floor to maintain rating.

- 12 Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.

Construction is damaged. Applies throughout floor. Repair TSE wall construction throughout floor to maintain rating.

Construction is damaged. Applies throughout floor. Repair Shaft Subdivision walls throughout floor to maintain rating.

- 13 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)

- 14 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)

The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)

- 15 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

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## 2.5 LEVEL 5

- 1 Penetrations are not firestopped on shaft exterior. Firestop TSE wall penetrations to maintain rating.

- 2 Framing membrane penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.

Supply air duct appears to not be provided with a fire damper. Install fire damper in TSE wall.

Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.

- 3 Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.

Penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.

- 4 Shaft contains plywood and wood 2x4s, but it is unclear what they are used for. Remove combustibles from shafts.

- 5 Penetrations are not sealed on the exterior of the shaft. Firestop TSE wall penetrations to maintain rating.

- 6 Penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.

Hatch is not self-closing. Repair hatch in TSE wall so that it is self-closing to latch.

- 7 Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.

Penetrations are not firestopped inside and outside. Firestop TSE wall penetrations to maintain rating.

- 8 Penetrations are not sealed on the inside or the outside of the shaft. Firestop TSE wall penetrations to maintain rating.

- 9 Hatches throughout this floor are not self-closing. Repair hatches so they are self-closing to latch. (Location not included in Appendix A)



Penetrations are not firestopped throughout the floor. Firestop TSE wall penetrations to maintain rating. (Location not included in Appendix A)

Penetrations are not fire stopped throughout floor. Firestop Shaft Subdivision wall penetrations to maintain rating. (Location not shown in Appendix A)

- 10 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)
- 11 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)  
The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)
- 12 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

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## 2.6 LEVEL 6

- 1 Damper has failed inspection. Repair, test and inspect damper in TSE wall.
- 2 Hatch closer and latch have been disabled. Repair hatch closer and latch in TSE wall so that it is self-closing to latch.
- 3 Sensing tube penetration sealed with white caulk. Remove white caulk and replace with firestopping in TSE wall.
- 4 Damper has failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panels for proper inspection, testing and maintenance of dampers in TSE wall. Test and inspect damper in TSE wall.
- 5 Wall patch is improperly sealed. Patch in TSE wall must be connected to wall studs and firestopped.
- 6 Penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.
- 7 Both hatch closers have been disabled. Repair hatch closers in TSE wall so they are self-closing to latch.
- 8 Damper has failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.
- 9 Penetrations sealed with white caulking. Remove white caulking in TSE wall and replace with firestopping.
- 10 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation.  
The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating.
- 11 Opening in shaft construction is not provided with rated opening protective. Patch Shaft Subdivision pipe chase wall construction to maintain rating.
- 12 Damper has failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.
- 13 Penetrations are sealed with gray caulk. Remove gray caulk from TSE wall and replace with firestopping.
- 14 Penetrations in rated Shaft Subdivision wall. Repair penetration in Shaft Subdivision wall to maintain rating.
- 15 Round duct penetrations are not provided with dampers. Install fire/smoke dampers in TSE wall.



- 16 Incomplete construction between shafts means that smoke compartmentation is not continuous. Repair Shaft Subdivision wall to maintain smoke compartmentation.
  - 17 Hatch closer has been disabled. Repair hatch closer in TSE wall so it is self-closing to latch.
  - 18 Discarded plywood stored in shaft. Remove combustibles from shaft.
  - 19 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).
  - 20 The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)
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## 2.7 LEVEL 7

- 1 Dampers have failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.
- 2 Hatch closer has been removed. Install hatch closer in TSE wall so it is self-closing to latch.
- 3 Penetrations are sealed with gray caulking. Remove grey caulking from TSE wall and replace with firestopping.
- 4 Discarded wood, including 2x4s with nails sticking out, have been abandoned in the shaft. Remove combustibles from shaft.
- 5 Hatch closer has been removed. Install hatch closer so hatch is self-closing to latch in TSE wall.  
Shaft construction above hatch has been removed. Repair TSE wall construction to maintain rating.  
Light switch installation obstructs egress from space. Relocate light switch so it does not obstruct the egress path.
- 6 Damper has failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.
- 7 Comment removed.
- 8 Trash and discarded wood are stored in shaft. Remove combustibles from shaft.
- 9 Hatch closer has been disabled. Hatch is so damaged that rating has been violated. Replace hatch in TSE wall with 90 min. rated hatch that is self-closing to latch.
- 10 Trash chute access hatch is not rated. Provide 90 min rated hatch that is self-closing to latch in TSE wall.
- 11 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating.  
The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating.
- 12 Penetrations are sealed with white caulking. Remove white caulking in TSE wall and replace with firestopping to maintain rating.  
Wall construction is damaged on the exterior. Repair wall TSE wall construction to maintain rating.
- 13 Comment removed.
- 14 Shaft construction is damaged. Repair TSE wall construction to maintain rating.
- 15 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)
- 16 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork



such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

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## 2.8 LEVEL 8

- 1 Dampers have failed inspection. Additional information from MD Anderson indicates that the dampers failed inspection due to broken springs. Repair, inspect and test dampers in TSE wall.
  - 2 Penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.
  - 3 Damper has failed inspection. Additional information from MD Anderson indicates that the damper requires an access panel to access the damper for testing. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.
  - 4 Comment removed.
  - 5 Closer has been disabled. Repair hatch closer in TSE wall so that it is self-closing to latch.
  - 6 Penetrations are not sealed or are sealed with gray caulk. Remove gray caulk and seal penetrations with firestopping in TSE wall to maintain rating.
  - 7 Penetrations are not sealed or are sealed with white caulk. Remove white caulk and seal penetrations with firestopping in TSE wall to maintain rating.
  - 8 Penetration is not firestopped. Firestop penetrations in TSE wall to maintain rating.
  - 9 Penetrations are sealed with gray caulk. Remove gray caulk and seal penetrations with firestopping in TSE wall to maintain rating.  
Wood and trash are stored in shaft. Remove combustibles from shafts.
  - 10 Trash is stored in shaft. Remove combustibles from shafts.
  - 11 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating.  
The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating.
  - 12 Closer has been disabled. Repair hatch closer in TSE wall so that it self-closes to latch.  
Plywood is discarded in shaft. Remove combustibles from pipe chase.
  - 13 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)
  - 14 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).
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## 2.9 LEVEL 9

- 1 Hatch does not close to latch. Repair hatch closer in TSE wall so that it is self-closing to latch.
- 2 Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 3 Dampers are marked as failed in 2011, but marked as passed in 2015. If damper passed inspection remove inspection stickers indicating failure. Additional information from MD Anderson indicates that on this level:
  - a Three (3) dampers failed due to broken springs. Repair, inspect and test dampers in Shaft Subdivision wall.



- b Seven (7) dampers require access panels to access the damper for testing. Install access panel for proper inspection, testing and maintenance of damper in Shaft Subdivision wall. Test and inspect damper in Shaft Subdivision wall.
  - c One (1) damper failed due to obstructed access. Provide access and/or modify existing design to allow proper access for, inspection, testing and maintenance of damper in Shaft Subdivision wall. Inspect and test damper in Shaft Subdivision wall.
- 4 Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 5 Separations between pipe chases and large chases are damaged throughout the floor. Repair Shaft Subdivisions between the pipe chases and large chases to maintain rating.  
Hatch springs have been disengaged throughout. Install hatch springs so the hatches are self-closing to latch in TSE wall.
- 6 Dampers have failed inspection and are not provided with access. Provide access or access panel as Additional information from MD Anderson indicates that:
- a Three (3) dampers failed due to broken springs. Repair and inspect dampers in TSE wall.
  - b Seven (7) dampers require access panels to access the damper for testing. Provide damper access panel and inspect damper in TSE wall.
  - c One (1) damper failed due to obstructed access. Remove obstruction to permit damper access and inspection in TSE wall.
- 7 Penetrations are not sealed or are sealed with white caulk. Remove white caulk and seal penetrations with firestopping in TSE wall to maintain rating.
- 8 Hatch springs have been disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 9 Pipe chase construction is damaged throughout the floor. Repair TSE wall construction throughout floor to maintain rating.  
Shaft construction is damaged throughout the floor. Repair Shaft Subdivision walls throughout floor to maintain rating.
- 10 Shaft Subdivision and TSE wall by 9.2157 is damaged. Repair Shaft Subdivision and TSE wall construction to maintain rating.
- 11 Pipe chase construction is damaged. Repair TSE wall construction to maintain rating.
- 12 Shaft construction contains gaps. Seal gaps in TSE wall/pipe chase subdivision wall and repair construction to maintain rating.
- 13 Internal separations between large shafts and plumbing chases are not fully constructed throughout the floor. Internal separations between large shafts are not continuous due to separations being installed after metal grate flooring installation. Separations terminate at the unrated grating and are therefore not continuous. Repair rated shafts subdivisions between the large chase and pipe chase to maintain rating.
- 14 Rated TSE wall and Shaft Subdivision wall construction located at pipe chases is damaged. Repair TSE wall and Shaft Subdivision wall construction to maintain rating. (Location not included in Appendix A)
- 15 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

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## 2.10 LEVEL 10

- 1 Penetrations are sealed with white caulk. Remove white caulk and seal penetrations with firestopping in Shaft Subdivision wall east of R10.2275 wall to maintain rating.
- 2 Hatch is not self-closing to latch. Repair hatch in TSE wall so that it is self-closing to latch.



- 3 Spray applied fire resistive material knocked off structure throughout space. Repair spray applied fire resistive material on structure to maintain rating.
- 4 Penetrations are sealed with gray caulk. Remove gray caulk and seal penetrations with firestopping in TSE wall to maintain rating.
- 5 Penetrations are sealed with gray caulk. Remove gray caulk and seal penetrations with firestopping in Shaft Subdivision walls to maintain rating.
- 6 Comment removed.
- 7 Comment removed.
- 8 Ducted penetration is not provided with a fire damper. Provide damper in TSE wall to maintain rating.
- 9 Shaft construction is damaged inside and outside of the shaft. Repair TSE wall construction to maintain rating. Penetrations are not sealed or are sealed with gray caulk. Remove gray caulk and replace with firestopping in TSE wall.
- 10 Capped ductwork penetrates shaft but is not provided with dampers. Provide fire dampers in TSE wall to maintain rating.
- 11 Hatch is not self-closing. Repair hatch in TSE wall so that it self-closes to latch.
- 12 Trash and plywood are discarded in shaft. Remove combustibles from shaft.
- 13 Exhaust duct with no damper penetrates shaft and is labeled indicating use for fume hoods. It appears the ductwork is decommissioned. Provide damper in TSE wall to maintain rating.
- 14 Penetrations are not sealed. Firestop penetrations in TSE wall to maintain rating.
- 15 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)
- 16 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating.  
The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating.
- 17 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

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## 2.11 LEVEL 11

- 1 Hatch springs are disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 2 Ductwork does not appear to have damper installed. Either provide fire damper or provide access to existing fire damper, if present. Install fire damper access panel for proper inspection testing and maintenance and inspect and test damper in TSE wall.
- 3 Shaft construction incomplete throughout. Repair TSE wall to maintain rating.  
Ductwork is inaccessible and not provided with dampers. Provide fire dampers in TSE wall.
- 4 Comment removed.
- 5 Shaft area extends over the hallway, and the assembly separating it from the corridor is approximately 6 in. thick. It does not appear to be a 2-hour rated assembly. Complete shaft separation in TSE wall.  
Penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.  
Hatch is not self-closing. Repair hatch in TSE wall so that it is self-closing to latch.
- 6 Penetrations are not sealed. Firestop penetrations in TSE wall to maintain rating.



Shaft construction is significantly damaged (appears to be water damage). Replace damaged construction in TSE wall to maintain rating.

- 7 Penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.
- 8 Ductwork penetrates shaft but is not provided with dampers. Appears to be decommissioned exhaust ductwork. Provide fire dampers in TSE wall.  
Trash is stored in shaft. Remove combustibles from shaft.  
Penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.  
Hatch springs are disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.
- 9 Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)
- 10 The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)  
The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)
- 11 Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A).

### 3 TABULAR FINDINGS

The table below presents the findings and recommendations included in Section 2, but are tabulated to make it more clear what the deficiency is related to. The “X” indicates whether the deficiency involves the Total Shaft Enclosure (TSE) Shaft Subdivision (SS) or “Other”. Items marked “comment removed” are not included in the table for clarify, and items with multiple comments under one number are separated and located consecutively.

| LEVEL 1 | ITEM                                                                                                         | TSE | SS | OTHER |
|---------|--------------------------------------------------------------------------------------------------------------|-----|----|-------|
| 1       | Hatch is listed for horizontal use, not vertical. Replace hatch in TSE wall with appropriately listed hatch. | X   |    |       |
| 2       | Conduit penetration is not firestopped. Firestop penetration in TSE wall to maintain rating.                 | X   |    |       |
| 3       | Plywood framing is installed behind ductwork. Replace framing in TSE wall with non-combustible framing.      | X   |    |       |
|         | Conduit not filled with firestopping. Fill conduit with firestopping in TSE wall to maintain rating.         | X   |    |       |



|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                |   |   |   |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 6  | Fire damper failed inspection in 2015 and is not provided with an access hatch. Additional information from MD Anderson indicates that two fire dampers failed inspection at this location due to no access panel, and two smoke dampers did not close upon fire alarm activation. Provide access panels to allow for proper access for inspection, testing and maintenance of TSE wall dampers. Repair, test and inspect dampers in TSE wall. | X |   |   |
| 7  | Multiple penetrations are not sealed or are sealed with white caulk. Remove white caulk and seal penetrations with firestopping in Shaft Subdivision wall.                                                                                                                                                                                                                                                                                     |   | X |   |
|    | Hatch is equipped with a spring, but the spring is not strong enough for the hatch to be self-closing. Install spring in hatch so the hatch is self-closing to latch in Shaft Subdivision wall.                                                                                                                                                                                                                                                |   | X |   |
| 9  | Pipe penetration is not firestopped. Seal pipe penetration with firestopping in TSE wall.                                                                                                                                                                                                                                                                                                                                                      | X |   |   |
| 11 | Floor pipe penetrations are not firestopped. Firestop floor pipe penetrations.                                                                                                                                                                                                                                                                                                                                                                 |   |   | X |
| 12 | Floor pipe penetrations are not firestopped. Firestop floor pipe penetrations.                                                                                                                                                                                                                                                                                                                                                                 |   |   | X |
| 13 | Floor pipe penetrations are not firestopped. Firestop floor pipe penetrations.                                                                                                                                                                                                                                                                                                                                                                 |   |   | X |
| 14 | 14. The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating.                                                                                                                                                                                                                       |   | X |   |
|    | The TSE wall construction in the pipe chase is damaged throughout pipe chases. Repair TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                                                | X |   |   |
| 15 | Hatch is equipped with a spring, but the spring is not strong enough for the hatch to be self-closing. Install spring on hatch so it is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                     | X |   |   |
| 16 | The wall construction in the pipe chase separating it from the larger chase is damaged. Repair Shaft Subdivision wall construction between the pipe chase and the large chase to maintain rating.                                                                                                                                                                                                                                              |   | X |   |
| 17 | If hatch latches behind an occupant, it requires special knowledge to get out of the shaft. Replace hatch hardware so it does not require special knowledge or tools to open.                                                                                                                                                                                                                                                                  |   |   | X |



|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 18      | Conduit is sealed with foam, not firestopping. Remove foam and seal conduit with firestopping in TSE wall.                                                                                                                                                                                                                                                                                                                                      | X |   |   |
| 19      | CMU joint in shaft construction is not firestopped. Joint is approximately 1 in. wide. Repair CMU joint to maintain rating in TSE wall.                                                                                                                                                                                                                                                                                                         | X |   |   |
| 21      | Penetrations between the two shafts (pipe chase and large chase) are not sealed and the two shafts communicate. Seal penetrations in Shaft Subdivision wall between the pipe chase and large chase to maintain rating.                                                                                                                                                                                                                          |   | X |   |
| 22      | Shaft construction is compromised and is not separated from office space. Repair shaft construction to maintain rating in TSE wall.                                                                                                                                                                                                                                                                                                             | X |   |   |
| 23      | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)                                                                                                                                     |   | X |   |
| 24      | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |
| LEVEL 2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
| 1       | Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                                                                                             | X |   |   |
| 2       | Shaft construction terminates at the underside of steel beam equipped with structural fireproofing (SFRM). However, bottom of beam is not provided with SFRM. Complete SFRM installation on the beam at TSE wall.                                                                                                                                                                                                                               | X |   |   |
| 3       | Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                                                                                             | X |   |   |
| 4       | Penetrations are sealed with white caulking. Remove white caulking and seal penetrations with firestopping in TSE wall.                                                                                                                                                                                                                                                                                                                         | X |   |   |



|    |                                                                                                                                                                                                                                                                                                                              |   |   |   |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 5  | Rated Shaft Subdivision construction terminates at the metal grating used as flooring at the bottom and at unprotected beams at the top. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation.      |   | X |   |
| 6  | Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                          | X |   |   |
| 7  | Hatch installation is damaged. Repair hatch assembly in Shaft Subdivision wall.                                                                                                                                                                                                                                              |   | X |   |
| 8  | Rubbish and plywood stored in shaft. Remove combustible materials from shafts.                                                                                                                                                                                                                                               |   |   | X |
| 9  | Inaccessible hatch is propped open with newspaper. Remove prop and ensure hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                        | X |   |   |
| 10 | Penetrations and joints are sealed with white caulking in shaft construction throughout the floor. Remove white caulking material in rated TSE walls and replace with firestopping.                                                                                                                                          | X |   |   |
|    | Penetrations and joints are sealed with white caulking in shaft construction throughout the floor. Remove white caulking material in rated Shaft Subdivision walls and replace with firestopping.                                                                                                                            |   | X |   |
| 11 | Access hatch does not close to latch. Repair hatch so it closes to latch in TSE wall.                                                                                                                                                                                                                                        | X |   |   |
| 12 | Penetrations are sealed with white caulk. Remove material and replace with firestopping in TSE wall.                                                                                                                                                                                                                         | X |   |   |
| 13 | Damper was last inspected in 2004. Additional information from MD Anderson indicates the fire damper failed inspection and will require installation of access panels to allow for testing. Install access panels for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall. | X |   |   |
| 14 | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)                                                                   |   | X |   |
|    | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)                                                                                                                                                          | X |   |   |



|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 15      | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |
| LEVEL 3 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
| 1       | Fire damper has failed inspection. Additional information from MD Anderson indicates two smoke dampers are blocking access to two fire dampers. Provide access and/or modify existing design to allow proper access for, inspection, testing and maintenance of dampers in TSE wall. Inspect and test dampers in TSE wall.                                                                                                                      | X |   |   |
| 2       | Shaft construction is damaged. Repair TSE shaft wall construction to maintain rating.                                                                                                                                                                                                                                                                                                                                                           | X |   |   |
| 3       | Hatch is not self-closing. Repair closer and ensure hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                                                                                                 | X |   |   |
| 4       | Access hatch is obstructed by light fixture. Move light fixture so hatch is not obstructed.                                                                                                                                                                                                                                                                                                                                                     |   |   | X |
| 6       | Hatch is not self-closing. Add closer or repair hatch so it is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                                                                                               | X |   |   |
| 7       | Penetrations are sealed with gray caulking. Remove gray caulking and seal penetrations with firestopping in Shaft Subdivision wall.                                                                                                                                                                                                                                                                                                             |   | X |   |
| 8       | Shaft is being used to store combustible trash/storage. Remove combustible materials from shafts.                                                                                                                                                                                                                                                                                                                                               |   |   | X |
| 9       | Damper failed inspection. Repair, inspect and test damper in TSE wall.                                                                                                                                                                                                                                                                                                                                                                          | X |   |   |
| 10      | Multiple penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                                                                | X |   |   |
| 11      | Fire damper cannot be accessed for inspection. Ceiling has a hard lid with no access on one side, and the duct is insulated on the other. Install access panels for proper inspection, testing and maintenance of dampers in TSE wall. Test and inspect damper in TSE wall.                                                                                                                                                                     | X |   |   |



|    |                                                                                                                                                                                                                                                                                                                                                                        |   |   |   |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 12 | Penetrations are sealed with gray caulking. Remove gray caulk and seal penetrations with firestopping in TSE wall.                                                                                                                                                                                                                                                     | X |   |   |
| 13 | Large hole in Shaft Subdivision connects two large shafts. Repair construction of Shaft Subdivision wall to maintain rating.                                                                                                                                                                                                                                           |   | X |   |
| 14 | Spray applied fire resistive material has been knocked off the structure. Repair spray applied fire resistive material.                                                                                                                                                                                                                                                |   |   | X |
| 15 | Shaft is being used to store trash. Remove combustible materials from shafts.                                                                                                                                                                                                                                                                                          |   |   | X |
| 16 | Multiple penetrations are not firestopped. Firestop penetrations in TSE wall.                                                                                                                                                                                                                                                                                          | X |   |   |
|    | Shaft construction is damaged. Repair TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                        | X |   |   |
| 17 | Multiple penetrations are not firestopped. Firestop penetrations in TSE wall.                                                                                                                                                                                                                                                                                          | X |   |   |
|    | Shaft construction is damaged. Repair TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                        | X |   |   |
| 18 | Hatch is not self-closing. Repair hatch and ensure the hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                     | X |   |   |
| 19 | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not shown in Appendix A)                                                               |   | X |   |
| 20 | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)                                                                                                             |   | X |   |
|    | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                                    | X |   |   |
| 21 | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or |   |   | X |



|         |                                                                                                                                                                           |   |   |   |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
|         | separate with rated construction. (Location not included in Appendix A).                                                                                                  |   |   |   |
| LEVEL 4 |                                                                                                                                                                           |   |   |   |
| 1       | Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                         | X |   |   |
| 2       | Penetrations are sealed with white caulking instead of firestopping throughout the area. Remove white caulking and replace with firestopping to maintain TSE wall rating. | X |   |   |
| 3       | Shaft is being used to store plywood. Remove combustible materials from shafts.                                                                                           |   |   | X |
| 4       | Trash is being stored throughout shafts on this floor. Remove combustible materials from shafts.                                                                          |   |   | X |
| 5       | Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                         | X |   |   |
| 6       | Penetration is not firestopped. Firestop Shaft Subdivision pipe chase wall penetrations to maintain rating.                                                               |   | X |   |
| 7       | Multiple penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.                                                                             | X |   |   |
| 8       | Multiple penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.                                                                             | X |   |   |
| 9       | Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                         | X |   |   |
| 10      | Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                         | X |   |   |
|         | Construction is damaged. Applies throughout floor. Repair TSE shaft wall construction throughout floor to maintain rating.                                                | X |   |   |
|         | Construction is damaged. Applies throughout floor. Repair Shaft Subdivision walls throughout floor to maintain rating.                                                    |   | X |   |
| 11      | Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                         | X |   |   |



|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
|         | Construction is damaged. Applies throughout floor. Repair TSE wall construction throughout floor to maintain rating.                                                                                                                                                                                                                                                                                                                            | X |   |   |
|         | Construction is damaged. Applies throughout floor. Repair Shaft Subdivision walls throughout floor to maintain rating.                                                                                                                                                                                                                                                                                                                          |   | X |   |
| 12      | Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                                                               | X |   |   |
|         | Construction is damaged. Applies throughout floor. Repair TSE wall construction throughout floor to maintain rating.                                                                                                                                                                                                                                                                                                                            | X |   |   |
|         | Construction is damaged. Applies throughout floor. Repair Shaft Subdivision walls throughout floor to maintain rating.                                                                                                                                                                                                                                                                                                                          |   | X |   |
| 13      | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of Shaft Subdivision walls to maintain rating. Note: this likely entails modifying the grating installation. (Location not included in Appendix A)                                                                                                                                     |   | X |   |
| 14      | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                      |   | X |   |
|         | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                                                                                                             | X |   |   |
| 15      | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |
| LEVEL 5 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
| 1       | Penetrations are not firestopped on shaft exterior. Firestop TSE wall penetrations to maintain rating.                                                                                                                                                                                                                                                                                                                                          | X |   |   |
| 2       | Framing membrane penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.                                                                                                                                                                                                                                                                                                                                           | X |   |   |
|         | Supply air duct appears to not be provided with a fire damper. Install fire damper in TSE wall.                                                                                                                                                                                                                                                                                                                                                 | X |   |   |



|    |                                                                                                                                                                                                                                                   |   |   |   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
|    | Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                 | X |   |   |
| 3  | Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                               | X |   |   |
|    | Penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.                                                                                                                                                              | X |   |   |
| 4  | Shaft contains plywood and wood 2x4s, but it is unclear what they are used for. Remove combustibles from shafts.                                                                                                                                  |   |   | X |
| 5  | Penetrations are not sealed on the exterior of the shaft. Firestop TSE wall penetrations to maintain rating.                                                                                                                                      | X |   |   |
| 6  | Penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.                                                                                                                                                              | X |   |   |
|    | Hatch is not self-closing. Repair hatch in TSE wall so that it is self-closing to latch.                                                                                                                                                          | X |   |   |
| 7  | Hatch spring is disengaged and hatch is not self-closing. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                 | X |   |   |
|    | Penetrations are not firestopped inside and outside. Firestop TSE wall penetrations to maintain rating.                                                                                                                                           | X |   |   |
| 8  | Penetrations are not sealed on the inside or the outside of the shaft. Firestop TSE wall penetrations to maintain rating.                                                                                                                         | X |   |   |
| 9  | Hatches throughout this floor are not self-closing. Repair hatches so they are self-closing to latch. (Location not included in Appendix A)                                                                                                       |   |   | X |
|    | Penetrations are not firestopped throughout the floor. Firestop TSE wall penetrations to maintain rating. (Location not included in Appendix A)                                                                                                   | X |   |   |
|    | Penetrations are not fire stopped throughout floor. Firestop all Shaft Subdivision wall penetrations to maintain rating. (Location not included in Appendix A)                                                                                    |   | X |   |
| 10 | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of all Shaft Subdivision walls to maintain rating. (Location not included in Appendix A) |   | X |   |
| 11 | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft                                                                                                                         |   | X |   |



|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |  |   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--|---|
|         | Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                                                                                                                                                |   |  |   |
|         | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                                                                                                             | X |  |   |
| 12      | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |  | X |
| LEVEL 6 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |  |   |
| 1       | Damper has failed inspection. Repair, test and inspect damper in TSE wall.                                                                                                                                                                                                                                                                                                                                                                      | X |  |   |
| 2       | Hatch closer and latch have been disabled. Repair hatch closer and latch in TSE wall so that it is self-closing to latch.                                                                                                                                                                                                                                                                                                                       | X |  |   |
| 3       | Sensing tube penetration sealed with white caulk. Remove white caulk and replace with firestopping in TSE wall.                                                                                                                                                                                                                                                                                                                                 | X |  |   |
| 4       | Damper has failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panels for proper inspection, testing and maintenance of dampers in TSE wall. Test and inspect damper in TSE wall.                                                                                                                                                                              | X |  |   |
| 5       | Wall patch is improperly sealed. Patch in TSE wall must be connected to wall studs and firestopped.                                                                                                                                                                                                                                                                                                                                             | X |  |   |
| 6       | Penetrations are not firestopped. Firestop TSE wall penetrations to maintain rating.                                                                                                                                                                                                                                                                                                                                                            | X |  |   |
| 7       | Both hatch closers have been disabled. Repair hatch closers in TSE wall so they are self-closing to latch.                                                                                                                                                                                                                                                                                                                                      | X |  |   |
| 8       | Damper has failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.                                                                                                                                                                                | X |  |   |



|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 9  | Penetrations sealed with white caulking. Remove white caulking in TSE wall and replace with firestopping.                                                                                                                                                                                                                                                                                                                                       | X |   |   |
| 10 | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of all Shaft Subdivision walls to maintain rating.                                                                                                                                                                                                                                     |   | X |   |
|    | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating.                                                                                                                                                                                                                            |   | X |   |
| 11 | Opening in shaft construction is not provided with rated opening protective. Patch Shaft Subdivision pipe chase wall construction to maintain rating.                                                                                                                                                                                                                                                                                           |   | X |   |
| 12 | Damper has failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.                                                                                                                                                                                | X |   |   |
| 13 | Penetrations are sealed with gray caulk. Remove gray caulk from TSE wall and replace with firestopping.                                                                                                                                                                                                                                                                                                                                         | X |   |   |
| 14 | Penetrations in rated Shaft Subdivision wall. Repair penetration in Shaft Subdivision wall to maintain rating.                                                                                                                                                                                                                                                                                                                                  |   | X |   |
| 15 | Round duct penetrations are not provided with dampers. Install fire/smoke dampers in TSE wall.                                                                                                                                                                                                                                                                                                                                                  | X |   |   |
| 16 | Incomplete construction between shafts means that smoke compartmentation is not continuous. Repair Shaft Subdivision wall to maintain smoke compartmentation.                                                                                                                                                                                                                                                                                   |   | X | X |
| 17 | Hatch closer has been disabled. Repair hatch closer in TSE wall so it is self-closing to latch.                                                                                                                                                                                                                                                                                                                                                 | X |   |   |
| 18 | Discarded plywood stored in shaft. Remove all combustibles from shaft.                                                                                                                                                                                                                                                                                                                                                                          |   |   | X |
| 19 | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |



|         |                                                                                                                                                                                                                                                                    |   |   |   |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 20      | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)                                                                                                | X |   |   |
| LEVEL 7 |                                                                                                                                                                                                                                                                    |   |   |   |
| 1       | Dampers have failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall. | X |   |   |
| 2       | Hatch closer has been removed. Install hatch closer in TSE wall so it is self-closing to latch.                                                                                                                                                                    | X |   |   |
| 3       | Penetrations are sealed with gray caulking. Remove grey caulking from TSE wall and replace with firestopping.                                                                                                                                                      | X |   |   |
| 4       | Discarded wood, including 2x4s with nails sticking out, have been abandoned in the shaft. Remove all combustibles from shaft.                                                                                                                                      |   |   | X |
| 5       | Hatch closer has been removed. Install hatch closer so hatch is self-closing to latch in TSE wall.                                                                                                                                                                 | X |   |   |
|         | Shaft construction above hatch has been removed. Repair TSE wall construction to maintain rating.                                                                                                                                                                  | X |   |   |
|         | Light switch installation obstructs egress from space. Relocate light switch so it does not obstruct the egress path.                                                                                                                                              |   |   | X |
| 6       | Damper has failed inspection. Additional information from MD Anderson indicates damper failed inspection due to no access panel. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.   | X |   |   |
| 8       | Trash and discarded wood are stored in shaft. Remove all combustibles from shaft.                                                                                                                                                                                  | X |   |   |
| 9       | Hatch closer has been disabled. Hatch is so damaged that rating has been violated. Replace hatch in TSE wall with 90 min. rated hatch that is self-closing to latch.                                                                                               | X |   |   |
| 10      | Trash chute access hatch is not rated. Provide 90 min rated hatch that is self-closing to latch in TSE wall.                                                                                                                                                       | X |   |   |
| 11      | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft                                                                                                                                          |   | X |   |



|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
|         | Subdivision wall construction between the pipe chases and large shafts to maintain rating.                                                                                                                                                                                                                                                                                                                                                      |   |   |   |
|         | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                                                   | X |   |   |
| 12      | Penetrations are sealed with white caulking. Remove white caulking in TSE wall and replace with firestopping to maintain rating.                                                                                                                                                                                                                                                                                                                | X |   |   |
|         | Wall construction is damaged on the exterior. Repair wall TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                                                                             | X |   |   |
| 14      | Shaft construction is damaged. Repair TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                                                                                                 | X |   |   |
| 15      | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of all Shaft Subdivision walls to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                               |   | X |   |
| 16      | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |
| LEVEL 8 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
| 1       | Dampers have failed inspection. Additional information from MD Anderson indicates that the dampers failed inspection due to broken springs. Repair, inspect and test dampers in TSE wall.                                                                                                                                                                                                                                                       | X |   |   |
| 2       | Penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                                                                         | X |   |   |
| 3       | Damper has failed inspection. Additional information from MD Anderson indicates that the damper requires an access panel to access the damper for testing. Install access panel for proper inspection, testing and maintenance of damper in TSE wall. Test and inspect damper in TSE wall.                                                                                                                                                      | X |   |   |
| 5       | Closer has been disabled. Repair hatch closer in TSE wall so that it is self-closing to latch.                                                                                                                                                                                                                                                                                                                                                  | X |   |   |



|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 6       | Penetrations are not sealed or are sealed with gray caulk. Remove gray caulk and seal all penetrations with firestopping in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                        | X |   |   |
| 7       | Penetrations are not sealed or are sealed with white caulk. Remove white caulk and seal all penetrations with firestopping in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                      | X |   |   |
| 8       | Penetration is not firestopped. Firestop penetrations in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                                                                           | X |   |   |
| 9       | Penetrations are sealed with gray caulk. Remove gray caulk and seal penetrations with firestopping in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                              | X |   |   |
|         | Wood and trash are stored in shaft. Remove all combustibles from shafts.                                                                                                                                                                                                                                                                                                                                                                        |   |   | X |
| 10      | Trash is stored in shaft. Remove all combustibles from shafts.                                                                                                                                                                                                                                                                                                                                                                                  |   |   | X |
| 11      | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating.                                                                                                                                                                                                                            |   | X |   |
|         | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                                                   | X |   |   |
| 12      | Closer has been disabled. Repair hatch closer in TSE wall so that it self-closes to latch.                                                                                                                                                                                                                                                                                                                                                      | X |   |   |
|         | Plywood is discarded in shaft. Remove combustibles from pipe chase.                                                                                                                                                                                                                                                                                                                                                                             |   |   | X |
| 13      | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of all Shaft Subdivision walls to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                               |   | X |   |
| 14      | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |
| LEVEL 9 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |



|   |                                                                                                                                                                                                                                                      |   |   |  |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|--|
| 1 | Hatch does not close to latch. Repair hatch closer in TSE wall so that it is self-closing to latch.                                                                                                                                                  | X |   |  |
| 2 | Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                  | X |   |  |
| 3 | Dampers are marked as failed in 2011, but marked as passed in 2015. If damper passed inspection remove inspection stickers indicating failure. Additional information from MD Anderson indicates that on this level:                                 |   |   |  |
|   | Three (3) dampers failed due to broken springs. Repair, inspect and test dampers in Shaft Subdivision wall.                                                                                                                                          |   | X |  |
|   | Seven (7) dampers require access panels to access the damper for testing. Install access panel for proper inspection, testing and maintenance of damper in Shaft Subdivision wall. Test and inspect damper in Shaft Subdivision wall.                |   | X |  |
|   | One (1) damper failed due to obstructed access. Provide access and/or modify existing design to allow proper access for, inspection, testing and maintenance of damper in Shaft Subdivision wall. Inspect and test damper in Shaft Subdivision wall. |   | X |  |
| 4 | Hatch spring is disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                  | X |   |  |
| 5 | Separations between pipe chases and large chases are damaged throughout the floor. Repair Shaft Subdivisions between the pipe chases and large chases to maintain rating.                                                                            |   | X |  |
|   | Hatch springs have been disengaged throughout floor. Install hatch springs so the hatches are self-closing to latch in TSE wall.                                                                                                                     | X |   |  |
| 6 | Dampers have failed inspection and are not provided with access. Provide access or access panel as Additional information from MD Anderson indicates that:                                                                                           |   |   |  |
|   | Three (3) dampers failed due to broken springs. Repair and inspect dampers in TSE wall.                                                                                                                                                              | X |   |  |
|   | Seven (7) dampers require access panels to access the damper for testing. Provide damper access panel and inspect damper in TSE wall.                                                                                                                | X |   |  |
|   | One (1) damper failed due to obstructed access. Remove obstruction to permit damper access and inspection in TSE wall.                                                                                                                               | X |   |  |



|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 7        | Penetrations are not sealed or are sealed with white caulk. Remove white caulk and seal all penetrations with firestopping in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                      | X |   |   |
| 8        | Hatch springs have been disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                                                                                     | X |   |   |
| 9        | Pipe chase construction is damaged throughout the floor. Repair TSE wall construction throughout floor to maintain rating. (Location not noted in Appendix A)                                                                                                                                                                                                                                                                                   | X |   |   |
|          | Shaft construction is damaged throughout the floor. Repair Shaft Subdivision walls throughout floor to maintain rating. (Location not noted in Appendix A)                                                                                                                                                                                                                                                                                      |   | X |   |
| 10       | Shaft Subdivision and TSE wall by 9.2157 is damaged. Repair Shaft Subdivision and TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                                                     | X |   |   |
| 11       | Pipe chase construction is damaged. Repair TSE wall construction to maintain rating.                                                                                                                                                                                                                                                                                                                                                            | X |   |   |
| 12       | Shaft construction contains gaps. Seal gaps in TSE wall/pipe chase subdivision wall and repair construction to maintain rating.                                                                                                                                                                                                                                                                                                                 | X |   |   |
| 13       | Internal separations between large shafts and plumbing chases are not fully constructed throughout the floor. Internal separations between large shafts are not continuous due to separations being installed after metal grate flooring installation. Separations terminate at the unrated grating and are therefore not continuous. Repair all rated shafts subdivisions between the large chase and pipe chase to maintain rating.           |   | X |   |
| 14       | Rated TSE wall and Shaft Subdivision wall construction located at pipe chases is damaged. Repair TSE wall and Shaft Subdivision wall construction to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                                                                     | X |   |   |
| 15       | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |
| LEVEL 10 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |



|    |                                                                                                                                                                                                                                                   |   |   |   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 1  | Penetrations are sealed with white caulk. Remove white caulk and seal all penetrations with firestopping in Shaft Subdivision wall east of R10.2275 wall to maintain rating.                                                                      |   | X |   |
| 2  | Hatch is not self-closing to latch. Repair hatch in TSE wall so that it is self-closing to latch.                                                                                                                                                 | X |   |   |
| 3  | Spray applied fire resistive material knocked off structure throughout space. Repair spray applied fire resistive material on structure to maintain rating.                                                                                       |   | X |   |
| 4  | Penetrations are sealed with gray caulk. Remove gray caulk and seal all penetrations with firestopping in TSE wall to maintain rating.                                                                                                            | X |   |   |
| 5  | Penetrations are sealed with gray caulk. Remove gray caulk and seal all penetrations with firestopping in Shaft Subdivision walls to maintain rating.                                                                                             |   | X |   |
| 8  | Ducted penetration is not provided with a fire damper. Provide damper in TSE wall to maintain rating.                                                                                                                                             | X |   |   |
| 9  | Shaft construction is damaged inside and outside of the shaft. Repair TSE wall construction to maintain rating.                                                                                                                                   | X |   |   |
|    | Penetrations are not sealed or are sealed with gray caulk. Remove gray caulk and replace with firestopping in TSE wall.                                                                                                                           | X |   |   |
| 10 | Capped ductwork penetrates shaft but is not provided with dampers. Provide fire dampers in TSE wall to maintain rating.                                                                                                                           | X |   |   |
| 11 | Hatch is not self-closing. Repair hatch in TSE wall so that it self-closes to latch.                                                                                                                                                              | X |   |   |
| 12 | Trash and plywood are discarded in shaft. Remove all combustibles from shaft.                                                                                                                                                                     |   |   | X |
| 13 | Exhaust duct with no damper penetrates shaft and is labeled indicating use for fume hoods. It appears the ductwork is decommissioned. Provide damper in TSE wall to maintain rating.                                                              | X |   |   |
| 14 | Penetrations are not sealed. Firestop penetrations in TSE wall to maintain rating.                                                                                                                                                                | X |   |   |
| 15 | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of all Shaft Subdivision walls to maintain rating. (Location not included in Appendix A) |   | X |   |



|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| 16       | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                      |   | X |   |
|          | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. . (Location not included in Appendix A)                                                                                                                                                                                                                                                                           | X |   |   |
| 17       | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |
| LEVEL 11 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
| 1        | Hatch springs are disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                                                                                           | X |   |   |
| 2        | Ductwork does not appear to have damper installed. Either provide fire damper or provide access to existing fire damper, if present. Install fire damper access panel for proper inspection testing and maintenance and inspect and test damper in TSE wall.                                                                                                                                                                                    | X |   |   |
| 3        | Shaft construction incomplete throughout. Repair TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                                                                                   | X |   |   |
|          | Ductwork is inaccessible and not provided with dampers. Provide fire dampers in TSE wall.                                                                                                                                                                                                                                                                                                                                                       | X |   |   |
| 5        | Shaft area extends over the hallway, and the assembly separating it from the corridor is approximately 6 in. thick. It does not appear to be a 2-hour rated assembly. Complete shaft separation in TSE wall.                                                                                                                                                                                                                                    | X |   |   |
|          | Penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                                                                         | X |   |   |
|          | Hatch is not self-closing. Repair hatch in TSE wall so that it is self-closing to latch.                                                                                                                                                                                                                                                                                                                                                        | X |   |   |
| 6        | Penetrations are not sealed. Firestop penetrations in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                                                                              | X |   |   |



|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
|    | Shaft construction is significantly damaged (appears to be water damage). Replace damaged construction in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                          | X |   |   |
| 7  | Penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                                                                         | X |   |   |
| 8  | Ductwork penetrates shaft but is not provided with dampers. Appears to be decommissioned exhaust ductwork. Provide fire dampers in TSE wall.                                                                                                                                                                                                                                                                                                    | X |   |   |
|    | Trash is stored in shaft. Remove all combustibles from shaft.                                                                                                                                                                                                                                                                                                                                                                                   |   |   | X |
|    | Penetrations are not firestopped. Firestop penetrations in TSE wall to maintain rating.                                                                                                                                                                                                                                                                                                                                                         | X |   |   |
|    | Hatch springs are disengaged. Install hatch spring so the hatch is self-closing to latch in TSE wall.                                                                                                                                                                                                                                                                                                                                           | X |   |   |
| 9  | Rated Shaft Subdivision construction terminates at the metal grating used as flooring. Therefore the shaft rating is not continuous. Repair construction of all Shaft Subdivision walls to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                               |   | X |   |
| 10 | The wall construction in the pipe chase separating it from the larger shaft is damaged throughout the floor. Repair Shaft Subdivision wall construction between the pipe chases and large shafts to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                      |   | X |   |
|    | The TSE wall construction in the pipe chase is damaged throughout the floor. Repair TSE wall construction to maintain rating. (Location not included in Appendix A)                                                                                                                                                                                                                                                                             | X |   |   |
| 11 | Ducts that contain flammable vapors, corrosive fumes or vapors, and piping containing hazardous or toxic materials are not separated from shafts that enclose air ducts used to move environmental air. Remove the hazardous ductwork such as laboratory hood exhaust and piping containing hazardous or toxic substances such as natural gas piping from the shaft or separate with rated construction. (Location not included in Appendix A). |   |   | X |



## 4 CONCLUSION

The bulk of the comments are related to the construction of the Total Shaft Enclosure and Shaft subdivisions. As mentioned above and in earlier documents, hazardous ductwork and other items are intermingled with environmental air ductwork, which is not permitted, and additional Shaft Subdivisions must be added.

If you have any questions, please contact us.

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# 5 APPENDIX A: DEFICIENCY LOCATIONS