State of Oregon Department of Environmental Quality

Draft Rules

Fuel Tanks Seismic Stability 2023
Advisory Committee Meeting 3

March 3, 2023

Division 300
Draft Fuel Tanks Seismic Stability Rule

340-300-0001
Purpose and Applicability

1. The purpose of these rules is to establish:

a. The process and criteria for a facility-wide comprehensive assessment of vulnerability to the site-specific earthquake hazards, including shaking related to the Cascadia Subduction Zone, and post-earthquake secondary effects.

b. The process and criteria for mitigation plans designed by facilities to minimize risk to people and environment and submitted to the Department.

c. Fees for assessments reviews.

d. Fees for mitigation plans reviews.

e. The process, criteria and schedule for mitigation plans implementation.

f. Fees for ongoing compliance implementation.

2. The owners and operators of bulk oils and liquid fuels terminals or industrial facilities located in Columbia, Multnomah and Lane counties must

a. prepare and submit to DEQ the facility-wide seismic vulnerability assessment.

b. prepare and submit to DEQ facility-wide risk mitigation plans designed to:

- mitigate earthquake-induced damage to facilities (e.g. liquefaction risks, etc.).
- safeguard against major damage, collapse or major fuel spill.
- address potential of structures to maintain operational or safely shut down.
- provide mitigation implementation plans, timeline.
- periodic reports of the ongoing implementation of compliance measures.

c. implement the risk minimization measures described in mitigation plans when approved by the Department.

Statutory Authority: SB 1567 2022 Oregon Laws chap.99 ORS Chapter 468

340-300-0002
Definitions and Acronyms as used in this Division:

1. "Assessment team" means a multidisciplinary team consisting of a: project manager, on-site team leader, structural inspection professional(s), structural analyst, electrical inspection professional(s), mechanical inspection professional(s), corrosion specialist, cathodic protection specialist, geotechnical analyst, and representative(s) from the regulatory authority.
2. "Building Codes" include the most current ASCE7, IBC, OSSC *under development*.
3. "Department" means the Oregon Department of Environmental Quality
4. "Design level earthquake" a theoretical ground shaking event used in modern building codes to check the resilience of a structure. *under development*
5. "Earthquake hazard" aka "seismic hazard" means ground shaking and its secondary effects such as fires, landslides, tsunamis, ground failures, etc.
6. "Facility" means the entire bulk oils and liquid fuels terminal including any above or underground pipes, foundations of structures within the property line or properties operated together.
7. "Fuel" means fuel of any kind that is liquid at atmospheric temperature and pressure and any fractionation thereof, including, but not limited to, petroleum, gasoline, fuel oil, diesel oil, liquified natural gas, oil sludge, oil refuse, biological oils and blends, and oil mixed with wastes other than dredged spoil.
8. "Minimize risk" means to do everything possible to make a facility resilient to potential earthquake induced damages and secondary effects as to reduce the severity of harm to people and environment to the lowest possible level (as Low as Reasonably Practicable) approaching zero.
9. "Mitigation" is an action of doing everything possible to reduce the severity of harm cause by a facility in an event of an earthquake.
10. "Mitigation plan" is a plan outlining the measures the facility will implement to minimize the facility's vulnerability to earthquakes and to ensure safety of the facility employees and residents of the nearby communities. The plan must include the schedule of step- by-step measures implementation.
11. "Performance level" means the highest level of protection that can be achieved using the best achievable technology and those staffing levels, training procedures, and operational methods that provide the greatest degree of protection available. *under development*
12. "Secondary effects" include fires, floods, explosions, spills that occur due to earthquake damage on and off site.
13. "Seismic vulnerability assessment" means detailed evaluation of the risk of seismically induced damage and secondary effects to all components of a facility with a goal of identifying risk mitigation measures.
14. "Transfer and process pipeline" is a buried or aboveground pipeline used to carry fuel to or from a tank vessel or transmission pipeline, or to a vessel and the first valve inside secondary containment at the facility provided that any discharge on the facility side of that first valve will not directly impact waters of the state. A transfer pipeline includes

valves, and other appurtenances connected to the pipeline, pumping units, and fabricated assemblies associated with pumping units. A transfer and process pipeline do not include pipelines carrying ballast or bilge water, transmission pipelines, tank vessel or storage tanks. Instances where the transfer and process pipelines are not well defined will be determined on a case-by-case basis by the Department.

15. "Transloading" is transfer of fuels from one storage location to another or one transportation mode to another.
16. "Qualified Professional" means Professional Engineer registered in Oregon as required in OAR 820-10-1000 and ORS 670.310 & 672.255.

340-300-0003
Seismic Vulnerability Facility Assessment Process and Criteria

1. A comprehensive seismic vulnerability assessment or series of assessments submitted to the Department must:

a. be conducted and verified by the Assessment Team of qualified professionals using the most recent industry standards for assessing seismic risk to evaluate:
   - buildings, structures, and ancillary components.
   - bulk storage tanks.
   - spill containment structures.
   - transloading facilities, including wharves, piers, moorings and retaining structures.
   - loading racks.
   - control equipment; and
   - any other structures related to or supporting facilities that constitute the bulk oils or liquid fuels terminal.

b. assess vulnerability to liquefaction and its consequences such as lateral spreading and coseismal settlement.
c. assess existing structures design, retrofit potential, ability to withstand shaking.
d. assess safety of operating conditions, safe shutdown procedures, potential spills.
e. assess availability and integrity of automated sprinkler systems and sufficient supplies of firefighting foam and other emergency response equipment located in seismically resilient locations that will be accessible after an earthquake to mitigate the risk of fire and explosions following earthquake.
f. assess the integrity of firewalls surrounding facility to limit fire spreading into surrounding communities.

2. Facility must submit seismic vulnerability assessment updates to the Department:

a. upon application for any permits for retrofit or reconstruction of facilities.
b. when retrofits or significant new construction of any part of the facility occur.
c. when notified by the Department of the availability of new scientific, technical findings, best management practices or industry standards.

3. **Assessment timeline:**
a. by June 1, 2024, facility must submit the facility-wide complete assessment final report or
b. initial assessment report, outlining the summary of work completed and work to be done including proposed schedule for completion with justification.
4. **Timeline extension justification:**
a. acceptable basis for schedules is limited to the duration of specific site activities or sequencing of site activities dependent on previous results.
b. justifications involving waiting time for contractor availability must be accompanied by three proposals from independent contractors or sub-contractors providing alternate timelines for completion of the required assessments. Expense or preferred contractor availability are not acceptable justifications.
5. **Assessment Modifications:**
a. no later than 90 days after Department's notification of new scientific or technical findings.
b. 90-day submittals may include initial assessment analysis and a proposed schedule for assessment completion.

340-300-0004
Assessment Requirements

<Insert minimum elements based on Industry Standards for assessments. DEQ is developing specification for minimum elements of a seismic assessment based on existing standard of practice for engineering seismic assessments >

1. **The assessments must be conducted by the Assessment Team and must examine the structural integrity, capacity to withstand shaking and secondary effects, seismic designs and performance of**
a. structures - compliance with current building codes is the minimum requirement.
b. tanks - assessments must consider the required design level earthquake.
c. soil conditions - geotechnical engineering examination for liquefaction, lateral movement and settlement.
d. automated sprinkler systems and availability of sufficient supplies of firefighting foam and other emergency response equipment located in seismically resilient locations that will be accessible after an earthquake to mitigate fire and explosions following earthquake.
e. firewalls surrounding facilities to prevent spreading of fires following earthquake into surrounding communities.
f. Day-and-night onsite personnel available to maintain operations in the event of an earthquake.

2. **The findings of the Assessment Team must be reviewed by a Qualified Professional.**

3. **A final report that contains an executive summary, introduction, a description and summary of the observed conditions of the facility, any calculations and results from engineering analysis with noted deficiencies and corresponding remedial actions and appendices including all data and calculations must be submitted to DEQ.**

340-300-0005
Mitigation Implementation Plan Criteria

1. **Mitigation implementation plans must propose risk mitigation measures and address:**

a. site conditions.
b. impacts of earthquake and secondary effects.
c. potential consequences and resources needed to mitigate the risk.
d. retrofits, updates, reconstruction, removal, or relocation to comply with the correct building codes.
e. training and education.
f. connection to the local jurisdiction's requirements.
g. additional provisions for resilience to ground shaking caused by earthquake and secondary effects hazards at the facility location.

2. **Mitigation plan submittal date: 180 days after DEQ approval of assessment.**

3. **Mitigation implementation plan must outline interim mitigation actions that will be completed within 1, 3, & 5 years based on feasibility and order of importance.**
   a. proposed schedule must include justification for 1-, 3- and 5-year selections based on magnitude of risk reduction.
   b. proposed schedule may consider the duration of specific site activities or sequencing of tasks dependent on previous work.

4. **All mitigation measures approved by the Department must be completed within 10 years.**
5. **Amendment to mitigation plans implementation may be requested based on permit approval schedules received from other regulatory agencies.**

340-300-0006
Mitigation Plan Requirements

1. **Plans must provide designs stamped by a qualified professional ensuring that the final performance criteria are met during the required design level earthquake:**

a. Standards for all facilities comparable to new construction standards.
b. Individual system components must be specified, and an individual determination of component structural integrity provided.
c. Anticipated exposures to hazardous materials release identified; proposed measures to prevent those exposures.
d. Include provisions for piers, wharves, docks, control houses, etc.
e. Provide implementation plan specifying site specific determinations needed and schedule to complete modifications or construction.

2. **Final performance criteria will define allowable damage to infrastructure and restrictions on fuel release and containment.**

<Under development using comparable industry standard obtained from other jurisdiction research (e.g., Washington Oil Transfer requirements (WAC 173-180; WAC 173-184) or California MOTEMS)>

3. **Where reasonably practicable, mitigation measures for tanks and pipelines installed before the effective date of these rules must include installation and maintenance of the following:**

a. flexible mechanical devices between tanks and pipe connections.
b. deep foundations and/or structural shallow foundations.
c. anchored storage tanks.
d. flexible mechanical devices between tanks and pipe connections.
e. pipeline supports that protect against seismic motion.
f. automatic isolation shutoff valves triggered by seismic events.
g. additional protective measures.

4. **Where reasonably practicable, mitigation measures for all tanks and facilities must meet current building and fire code requirements as well as specific design and manufacturing standards to meet specific seismic design and inspection requirements from the:**

a. American Society for Testing and Materials.
b. American Petroleum Institute, including API Standard 650 – Welded Steel Tanks for Oil Storage.
c. American Society of Civil Engineers.
d. American Society of Mechanical Engineers.
e. International Building Code.
f. National Fire Protection Association.
g. Additional performance or design requirements developed by the Department.

5. **Mitigation requirements for out of service equipment:**

a. If not decommissioning the equipment, continue to comply with rule requirements for active equipment.
b. If decommissioning the equipment:
    - Transfer pipelines must be fuel-free, certified gas-free and blanked at both ends.
c. Storage tanks must be fuel-free, certified gas-free and disconnected.
d. Piping connections must be blanked.
e. Connected piping must be air gapped.
f. Electrified devices must be de-energized.

6. **Mitigation plans updates must be submitted:**

a. Before change in type of fuel stored and transloaded.
b. Before change in fuel storage and transloading capacity.
c. Before change in spill prevention technology, operations, or personnel procedures.
d. Before equipment decommissioning or return to service.
e. Within 3 months of related codes or standard changes.

340-300-0007
Reporting requirements, test methods and procedures

1. **Annual mitigation plan implementation status reports submitted by June 1st of each year, or on a schedule approved by the Department in the mitigation plan.**

2. **The Department and its contractors may enter regulated facilities and inspect related activities at reasonable hours. The Department should attempt to provide notice, but notice is not required.**

3. **Inspections and frequency:**

a. Periodic onsite special inspections by the geotechnical and structural engineers verifying that design criteria are met.
b. Periodic operation and maintenance inspections.

4. **Final report following mitigation plan implementation.**

340-300-0008
Program Administration and Compliance fees

1. **A facility owner must pay an Assessment Submittal Fee of $xxx,000. The fee must accompany submittal of a facility assessment plan.**

2. **A facility owner must pay a Risk Mitigation Implementation Plan Submittal Fee of $xxx,000. The fee must accompany submittal of a risk mitigation plan.**

3. **A facility owner must pay an annual compliance fee of $xx,000 by June 1 of each calendar year until mitigation plan implementation is approved by DEQ.**

4. **By April 1 of each year DEQ will assess expenses for contractor support incurred in the previous calendar year and provide a refund or supplemental fee assessment to match actual contract expenditures.**

340-300-0009
Department's Responsibility to Review and Approve Plans

1. **DEQ will review the facility assessment and the risk mitigation plan submitted under 2022 Oregon Laws Chapter 99. DEQ will approve the assessment if the assessment:**
   a. meets the requirements of 2022 Oregon Laws Chapter 99 and these rules.
2. **DEQ will approve the mitigation plan if the plan:**
   a. meets the requirements of 2022 Oregon Laws Chapter 99 and these rules and
   b. if implemented will minimize the human health and safety risk in the event of ground shaking and secondary effects.

3. **A facility will notify the Department in writing promptly of any significant change affecting the risk mitigation plan or its implementation. The Department may require the facility to update a mitigation plan because of these changes. Example of**

significant changes include the following:

a. Any information relating to circumstances that may affect full implementation of the plan.

b. The mitigation plan must show the applicant to use the current standards available at the time the mitigation plan was submitted or renewed taking into consideration risk mitigation techniques that are currently in use anywhere in the world. Mitigation technology's effectiveness, engineering feasibility, technological achievability, and cost will be considered.

4. Before the Department approves a risk mitigation implementation plan required under 2022 Oregon Rules chapter 99, DEQ will provide a copy of the mitigation plan to the Oregon Department of Geology and Mineral Industries, the office of the State Fire Marshal, and the Department of Energy for review.

5. Before approving a mitigation plan, the Department will provide a public notice and initiate a public comment period as follows:

a. The Department will announce the public notice through the Fuel Tank Seismic Stability GovDelivery mailing system.
b. The Department will hold a public comment period open for 30 days. This period may be extended at the Department's discretion.
c. The Department will post all application materials on DEQ's website by the time of public notice.

6. Public hearing

a. If requested by 10 entities or a group representing 10 entities within the first 20 days of the public comment period, a public hearing will be held. The Department will extend the public comment period and hold a hearing at least 14 calendar days before the close of the public comment period.
b. A 30-days' notice will be provided ahead of a public hearing.