Appendix A

Ground Failure Susceptibility Hazard Overlay District
DOWNTOWN ANCHORAGE
GROUND FAILURE SEISMIC HAZARD OVERLAY

INTENT AND PURPOSE

Overlay districts are established to accomplish Municipality policy objectives for specific areas such as those prone to specific hazards. The purpose of the Ground Displacement Seismic Hazard Overlay District is to minimize exposure to the effects of seismically induced ground failure, foster seismically resistant development, and minimize economic losses to the community from seismically induced ground failure in Downtown Anchorage. Provisions of this Overlay are intended provide for and promote safety of the general public in the event of earthquake induced ground failure. Such intentions are designed to minimize risks of life loss as well as property and economic losses.

APPLICATION

A. Boundaries

The Seismic Hazard Ground Failure Overlay applies to sites designated Zone 4 or Zone 5 within the Ground Failure Susceptibility area as delineated by Harding Lawson and adopted by the Anchorage Municipality.¹

B. Compliance

All new construction in seismically induced ground failure zones 4 and 5 shall meet design and construction requirements of the adopted Municipal Building Code. Geotechnical reports and structural designs shall show how structures will resist, without collapse, forces and ground displacement from anticipated grabens and/or pressure ridges. Development Standards will subsequently be imposed on all sites that exhibit characteristics of Zone 5 susceptibility.

All Geotechnical Reports will be reviewed by the Geotechnical Advisory Committee and the Department of Development Services.

C. Requirements

Uses and structure requirements will be permitted in accordance with underlying provisions of Title 21. The Ground Failure Susceptibility Hazard Overlay is a supplement to the basic land use district and shall be applied in a uniform manner to all properties within the district. In cases of conflict between requirements of the underlying district and the stricter previsions of the overlay-the overly will prevail.

¹ Anchorage Downtown Comprehensive Plan Adopted December 11, 2007 Assembly Ordinance 2007-113 (pg. 41)
PROHIBITED USES

Uses in Zone 5 will be prohibited that are typically associated with high-density, hazardous effects, and/or occupancies that may generate higher demand for emergency response resources. They include:

A. Emergency Service Providers and Critical Facilities

- fire, police and emergency communication systems
- hospitals and other emergency medical facilities,
- ambulance services
- power plant and utility substations,
- sewage treatment plants, water works

B. Occupancies generating potentially high demand for emergency response resources

- adult care facility,
- assisted living facilities (9 or more residents)
- long-term care
- childcare and pre-school facility, schools (college, high, elementary)
- correctional facilities including but not limited to jail, and community residential center
- uses that manufacture, handle or store hazardous or explosive materials including
- fueling stations

C. Very High and High Vulnerability Buildings in Hazard Zone 5 (see Risk Assessment Report Table 6.1): prohibit the following HAZUS Model Building types:

   i. Large Offices, (280,000 s.f.) – all foundations
   ii. Large Hotels (450,000 (s.f) – all foundations
   iii. Concrete Moment Frame High-rise (C1H) or Concrete Sheer Walls High-rise (C2H) Large Multi Family Residential, (145,000 s.f.) on shallow foundations
   iv. Concrete Shear Walls Medium rise (C2M) on shallow foundations
      a. Medium size Hotels (135,000 s.f.)
      b. Medium size Offices (80,000 s.f.)
      c. Medium Multi Family Residential, (40,000 s.f.)
      d. Multi Use (60,000 s.f.)

D. High Vulnerability buildings in Hazard Zones 4 (see Risk Assessment Report Table 6.2) prohibit the following HAZUS Model Building types of buildings on shallow foundations:

   i. Concrete Moment Frame High-rise (C1H) or Concrete Sheer Walls High-rise (C2H) Large Offices or Large Hotels.
DEVELOPMENT STANDARDS

A. Type of Foundation

New development in ground failure zone 5 will be required to use a mat foundation or similarly performing foundation approved by the Building Official.

B. Site Plan Review

All developments on sites meeting Zone 5 criteria will be subject to Administrative Site Plan Review including but not necessarily limited to the items in this section.

1. Density and Occupancy

Total day and night time occupancy will be identified for each use within a development with a maximum total not to exceed 400 occupants on small and medium lots; occupancy levels applied to large lots will be based on FAR but are expected not to exceed 500. Allowable densities assume: Lot coverage: 50%, and Floor efficiency: 85% efficiency (15% for stairways elevators, HVAC, etc). Under site plan review provisions medium and large sites over 30,000 s.f. could be eligible to modify setbacks to achieve a comparable FAR with smaller sites. Sites will be eligible for mixed use as a means to reduce 24-hour occupancies.

Table 1: Density*

<table>
<thead>
<tr>
<th>Building</th>
<th>Lot Size Sq. Ft. (1000)</th>
<th>Building Sq. Ft. (1000) Estimated units</th>
<th>Max stories**</th>
<th>Estimated Floor Area Ratio (FAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>3</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>20</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Estimated S.F. (net)</td>
<td>50 (42.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>30</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Estimated S.F. (net)</td>
<td>75 (63.8)</td>
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</tbody>
</table>

*Number of estimated persons depends on unit size and number of bedrooms however total population estimates assume MFR 1-2.2 persons per unit; Hotel 1.5 persons per room, Office 200-250 s.f. per person; retail/commercial: 6/1000

**Heights will be restricted to 5 stories; or 60 feet as measured from average grade on sites meeting the criteria of Zone 5.
2. **Emergency Response**
Impacts will be assessed on public services, including emergency response to minimize access disruption/ maximize search and rescue, debris removal, EMS, haz-mat response water supply, fire and police protection, wastewater disposal, storm water disposal, and related services.

3. **Circulation/Safety**
Impacts will be assessed on the transportation system and needs of emergency responders, including but not limited to existing and/or planned street designations and improvements, street capacity, access to collectors or arterials, connectivity, and debris removal. Design to consider pedestrian and vehicular traffic circulation and safety including from falling debris.

4. **Consistency**
Consistency with other elements of the Comprehensive plan will be assessed, e.g. Viewshed Diagram to Cook Inlet & Alaska Range and View to Mt. McKinley, large sidewalks to catch debris and/or enhance pedestrian facilities, and other sections as relevant.

**C. Mitigation of Adverse Impacts**
Conditioning may result if projected impacts are determined to be substantially greater than currently allowed; any significant adverse impacts anticipated to result from the use should be mitigated or offset to the maximum extent feasible.

**ADMINISTRATION**

**A. Split Lots**

- **Development of lots split into two or more Ground Failure Susceptibility Classifications**
  If a lot within the Overlay District is split by two or more Ground Failure Susceptibility classifications, each portion of the lot shall be regulated by the development standards applicable to that portion.

- **When development is partly out of designated Ground Failure Susceptibility Overlay**
  The use and development standards of this Overlay apply only to that part of the development that occurs within the boundaries of the Overlay.

**B. Nonconforming Uses**
A structure or the use of a structure or premises located within the Overlay District that was lawful before passage of the Overlay in conformity with the provisions of such regulations, may be continued subject to existing Title 21 provisions.

Any permitted alteration, addition, or repair to any nonconforming structure the cost of which equals or exceeds 50 percent of the fair market value of the structure which would result in substantially increasing the damage potential and/or life threatening injuries and/or fatalities shall be adequately retrofitted in accordance with guidelines to be developed by the Municipality.
In passing upon variances or appeals, the zoning board of examiners and appeals shall consider all technical evaluations, all relevant factors, standards specified in other sections and:

a. The danger to life and property due to ground failure damage including that debris materials may be swept onto other lands to the injury of others;
b. The susceptibility to damage from ground failure of the proposed facility and its contents to damage and the effect of such damage on the individual owner;
c. The importance of the services provided by the proposed facility to the community;
d. The necessity of the facility in a Zone 5 downtown location, where applicable;
e. The availability of alternative locations for the proposed use which are not subject to damage from seismically induced ground failure;
f. The continuing safety of access to the property for ordinary and emergency vehicles; and
g. The costs of providing governmental services during and after seismically induced ground failure, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems and streets and bridges.