

ALA Matrix of Guidelines and Standards Related to the Design and Assessment of Lifeline Systems for Natural Hazards (Oct. 11, 2000)

OIL PRODUCTS		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability									
Buried Piping	U				U				
Aboveground Piping*	U				C	C	C		
Pumping Station Piping*	U				C	C	C		
Well Facilities					C	C	C		
Refineries*	U		U		U		U		
Storage Tanks*	C		C		C		C		
Elect./Mech. Equip.*	C	C	C		C	C	C		
NATURAL GAS		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability									
Buried Pipelines	U				U				
Aboveground Piping*	U		U		C	C	C		
Compressor Station Piping*	U		U		C	C	C		
Well Facilities	U				C				
Elect./Mech. Equip.*	C	C	C		C	C	C		
LNG Facilities									
Piping	U				C	C	C		
Storage Tanks	C		C		C		C		
Elect./Mech. Equip.	C	C	C		C	C	C		
WATER (Potable & Raw)		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability									
Buried Pipelines	U				U				
Aboveground Pipelines*	U	U	U						
Pumping Plants*	C	C	C		C	C	C		
Storage Tanks*	C		C		C		C		
Well Facilities									
Elect./ Mechanical Equip.*	C	C	C		C	C	C		
WASTE WATER		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability									
Buried Pipelines	U	-	-						
Pumping Plants*	C	C	C		C	C	C		
Storage Tanks*	C		C		C		C		
Elect./ Mechanical Equip.*	C	C	C		C	C	C		
ELECTRIC POWER		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability									
Transmission Towers		C	C			C	C		
Distribution Poles									
Buried Conduits									
Substations	C				C				
Elect./ Mechanical Equip.	C	C	C		C	C	C		

TELECOMMUNICATIONS		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability									
Transmission Towers & Poles		C	C			C	C		
Buried Cables	U			U	U				
Underwater Cables									
Aboveground Cables*	U	U	U		U	U	U		
Switching Equipment*	U				U				
Cable Trays*	C	C	C		U	U	U		
Elect./ Mechanical Equip.*	C	C	C		C	C	C		
PORTS AND INLAND WATERWAYS		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability					U				
Piers/Wharves	U				U				
Breakwaters/Jetties	U				U				
Sea Walls	U				U				
Container Handling*	C		C		C	C	C		
Cargo Movement*	C	C	C		C	C	C		
Marine Oil Terminals*	C	C	C		C	C	C		
Elect./ Mechanical Equip.*	C	C	C		C	C	C		
HIGHWAYS AND ROADS		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability	U				U				
Bridges	U	U	U	U	U	U	U	U	
Embankments	U				U				
Road Beds	U				U				
Culverts	U				U				
Tunnels	U				U				
Signs*	C	C	C		C	C	C		
RAILROADS		Load Specification				Design Guidance			
Component	Seismic	Ice/Snow	Wind	Flood	Seismic	Ice/Snow	Wind	Flood	
System Reliability					U				
Bridges	U		U		U	U	U		
Embankments									
Rail Beds									
Culverts									
Tunnels									
Signs*	C	C	C		C	C	C		
Elect./ Mechanical Equip.*	C	C	C		C	C	C		

U = guidelines and standards not produced by an ANSI approved standard developing organization
 C = guidelines and standards produced by an ANSI approved standard developing organization
 A shaded box indicates that the component is not impacted by the listed natural hazard.
 An empty box indicates that guidelines and standards related to natural hazards are not available.
 * = new seismic (shaking) design explicit in 2000 NEHRP Provisions