

Attachment AA - Regulations and Standards Evaluation

U.S. laws and regulations define the requirements for passenger rail Equipment in the U.S. The list below is non-exhaustive and it shall be the Contractor's responsibility to comply with all applicable U.S. laws, regulations, advisories and standards.

Regulations and Standards Evaluation					
References	Descriptions	Relevant Subsystems	Notes	Compliance with standard (Yes/No)	Methodology to meet the reference.
29 CFR Part 1926	Safety and Health Regulations for Construction	High/Low Voltage Electrical Equipment			
40 CFR Part 82	Protection of Stratospheric Ozone	Heating, Ventilation, and Cooling			
40 CFR Part 201	Noise Emission Standards for Transportation Equipment, Interstate Rail Carriers	Noise and Vibration			
40 CFR Part 201.11	Standard for Locomotive Operation under Stationary Conditions	Noise and Vibration			
46 CFR Part 111.87	Electric Air Heating Equipment	Heating, Ventilation, and Cooling			
49 CFR Part 27	Non-discrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance	Interior Design; Persons of			
		Reduced Mobility			
		Requirements			
49 CFR Part 37	Transportation Services for Individuals with Disabilities (ADA)	Interior Design; Persons of Reduced Mobility			
		Requirements			
49 CFR Part 38	Americans with Disabilities Act (ADA) Accessibility Specifications for Transportation Vehicles	Interior Design; Persons of			
		Reduced Mobility			
		Requirements; Door Systems			
49 CFR Part 38 Appendix	Figures to Part 38	Persons of Reduced Mobility			
		Requirements			
49 CFR Part 38.111	General	Persons of Reduced Mobility			
		Requirements			
49 CFR Part 38.113	Doorways	Persons of Reduced Mobility			
		Requirements; Door Systems			
49 CFR Part 38.115	Interior Circulation, Handrails, and Stanchions	Persons of Reduced Mobility			
49 CFR Part 38.117	Floors, Steps, and Thresholds	Persons of Reduced Mobility			
49 CFR Part 38.119	Lighting	Persons of Reduced Mobility			
		Requirements; Lighting			
49 CFR Part 38.123	Restrooms	Persons of Reduced Mobility			
		Requirements			
49 CFR Part 38.125	Mobility Aid Accessibility	Persons of Reduced Mobility			
		Requirements			
49 CFR Part 38.175	High-Speed Rail Cars, Monorails, and Systems	Persons of Reduced Mobility			
		Requirements			
49 CFR Part 210	Railroad Noise Emission Compliance Regulations	Noise and Vibration			
49 CFR Part 213	Track Safety Standards	Bogie Requirements			
49 CFR Part 213.329	Curves, elevation and speed limitations	Bogie Requirements			
49 CFR Part 213.333	Automated Vehicle Inspection Systems	Bogie Requirements			
49 CFR 213.345	Vehicle Qualification Testing	Testing			
49 CFR Part 216	Special Notice and Emergency Order Procedures: Railroad Track, Locomotive and Equipment	Operating Environment; Heating, Ventilation, and Cooling			
		Lighting			
49 CFR Part 221	Rear End Marking Device Passenger, Commuter, and Freight Trains	Lighting			
49 CFR Part 221.13	Marking Device Display	Lighting			
49 CFR Part 221.14	Marking Devices	Lighting			
49 CFR Part 223	Safety Glazing Standards Locomotives, Passenger Cars and Cabooses	Structure and Crashworthiness			
49 CFR Part 223 Appendix A	Certification of Glazing Materials	Structure and Crashworthiness			
49 CFR Part 223.9	Requirements for New or Rebuilt Equipment	Structure and Crashworthiness			
49 CFR Part 227	Occupational Noise Exposure	Noise and Vibration			
49 CFR Part 229	Railroad Locomotive Safety Standards	Operating Environment; Noise and Vibration; Interior Design; Cab Design; Traction/Propulsion System; Braking System; Heating, Ventilation, and Cooling; Lighting; Bogie Requirements; Signaling and Control; High/Low Voltage Electrical Equipment			
49 CFR Part 229 Appendix D	Criteria for Certification of Crashworthy Event Recorder Memory Module	On Train Monitor and Recorder			
49 CFR Part 229 Subpart C	Ventilation and Heating Requirements. Inspection and Maintenance of HVAC units.	Heating, Ventilation, and Cooling; Cab Design			
49 CFR Part 229 Subpart E	Locomotive Electronics	Operating Environment; On Train Monitor and Recorder; Cab Design			
		Cab Design			
49 CFR Part 229.13	Control of Locomotives	Cab Design			
49 CFR Part 229.25	Tests: Every Periodic Inspection	Maintainability	49 CFR Part 238.805 will govern		

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49 CFR Part 229.27	Annual Tests	Maintainability	49 CFR Part 238.805 will govern		
49 CFR Part 229.29	Air Brake System Calibration, Maintenance, and Testing	Braking System; Maintainability	49 CFR Part 238.805 will govern		
49 CFR Part 229.31	Main Reservoir Tests	Braking System	49 CFR Part 238.731 will govern		
49 CFR Part 229.41	Protection against Personal Injury	Structure and Crashworthiness; High/Low Voltage Electrical Equipment			
49 CFR Part 229.45	General Condition	High/Low Voltage Electrical Equipment			
49 CFR Part 229.47	Emergency Brake Valve	Braking System; Cab Design	49 CFR Part 238.731 will govern		
49 CFR Part 229.49	Main Reservoir System	Braking System	49 CFR Part 238.731 will govern		
49 CFR Part 229.51	Aluminum Main Reservoirs	Braking System	49 CFR Part 238.731 will govern		
49 CFR Part 229.53	Brake Gauges	Braking System; Cab Design	49 CFR Part 238.731 will govern		
49 CFR Part 229.55	Piston Travel	Braking System	49 CFR Part 238.731 will govern		

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49 CFR Part 229.57	Foundation Brake Gear	Braking System	49 CFR Part 238.731 will govern		
49 CFR Part 229.59	Leakage	Braking System	49 CFR Part 238.731 will govern		
49 CFR Part 229.63	Lateral Motion	Bogie Requirements			
49 CFR Part 229.65	Spring Rigging	Bogie Requirements			
49 CFR Part 229.67	Trucks	Bogie Requirements			
49 CFR Part 229.71	Clearance above Top of Rail	Operating Environment; Signaling and Control			
49 CFR Part 229.73	Wheel Sets	Bogie Requirements			
49 CFR Part 229.77	Current Collectors	High/Low Voltage Electrical Equipment			
49 CFR Part 229.83	Insulation or Grounding of Metal Parts	High/Low Voltage Electrical Equipment;			
49 CFR Part 229.85	High Voltage Markings: Doors, Cover Plates, or Barriers	High/Low Voltage Electrical Equipment			
49 CFR Part 229.87	Hand-Operated Switches	High/Low Voltage Electrical Equipment			
49 CFR Part 229.89	Jumpers; Cable Connections	High/Low Voltage Electrical Equipment; Passenger Information and Communications			
49 CFR Part 229.91	Motors and Generators	High/Low Voltage Electrical Equipment			
49 CFR Part 229.115	Slip/Slide Alarms	Traction/Propulsion System; Braking System; Cab Design	49 CFR Part 238.731 will govern		
49 CFR Part 229.117	Speed Indicators	Signaling and Control; Cab Design			
49 CFR Part 229.119	Cabs, Floors, and Passageways	Heating, Ventilation, and Cooling; Cab Design			
49 CFR Part 229.121	Locomotive Cab Noise	Noise and Vibration			
49 CFR Part 229.123	Pilots, Snowplows, End Plates	Structure and Crashworthiness			
49 CFR Part 229.125	Headlights and Auxiliary Lights	Lighting			
49 CFR Part 229.127	Cab Lights	Lighting; Cab Design			
49 CFR Part 229.129	Locomotive Horn	Cab Design			
49 CFR Part 229.131	Sanders	Bogie Requirements; Braking System	As optioned by 49 CFR Part 238.753		
49 CFR Part 229.133	Interim Locomotive Conspicuity Measures – Auxiliary External Lights	Lighting			
49 CFR Part 229.135	Event Recorders	On Train Monitor and Recorder			
49 CFR Part 229.137	Sanitation; General Requirements	Interior Design; Cab Design			
49 CFR Part 229.139	Sanitation; Servicing Requirements	Interior Design			
49 CFR Part 229.140	Alerters	Cab Design	49 CFR Part 238.751 will govern		
49 CFR Part 229.141	Body Structure, MU Locomotives	Structure and Crashworthiness	49 CFR Part 238.703, 49 CFR Part 238.705, 49 CFR Part 238.707, 49 CFR Part 238.709, 49 CFR Part 238.711, 49 CFR Part 238.713, 49 CFR Part 238.715, 49 CFR Part 238.717 will govern		
49 CFR Part 231	Railroad Safety Appliance Standards	Structure and Crashworthiness; Braking System			
49 CFR Part 231.14	Passenger-Train Cars without End Platforms	Braking System			
49 CFR Part 231.18	Cars of Special Construction	Structure and Crashworthiness			
49 CFR Part 232	Brake System Safety Standards for Freight and Other Non-Passenger Trains and Equipment; End-of-Train Devices	Braking System			
49 CFR Part 232 Subpart B	General Requirements	Braking System			
49 CFR Part 232 Subpart E	End-of-Train Devices	Braking System			
49 CFR Part 232 Subpart F	Introduction of New Brake System Technology	Braking System			
49 CFR Part 232.407	Operations Requiring Use of Two-Way End-of-Train Devices; Prohibition on Purchase of Nonconforming Devices	Braking System			
49 CFR Part 236	Rules, Standards, and Instructions Governing the Installation, Inspection, Maintenance, and Repair of Signal and Train Control Systems, Devices, and Appliances	Signaling and Control			
49 CFR Part 236 Subpart H	Standards for Processor-Based Signal and Train Control Systems	Signaling and Control			
49 CFR Part 236 Subpart I	Positive Train Control Systems	Signaling and Control; On Train Monitor and Recorder			
49 CFR Part 236.1005	Requirements for Positive Train Control Systems	Signaling and Control			
49 CFR Part 238	Passenger Equipment Safety Standards	Operating Environment; Structure and Crashworthiness; Interior Design; Cab Design; Traction/Propulsion System; Braking System; Door Systems; Lighting; Passenger Information and Communications; On Train Monitor and Recorder; Fire Systems; Bogie Requirements; Signaling and Control; Couplers; High/Low Voltage Electrical Equipment			
49 CFR Part 238 Appendix B	Test Methods and Performance Criteria for the Flammability and Smoke Emission Characteristics of Materials Used in Passenger Cars and Locomotive Cabs	Fire Systems; Unit Safety Principles	As revised for Tier III		
49 CFR Part 238 Appendix C	Suspension System Safety Performance Standards	Bogie Requirements			
49 CFR Part 238 Appendix F	Alternative Dynamic Performance Requirements for Front End Structures of Cab Cars and MU Locomotives	Structure and Crashworthiness	As revised for Tier III		

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49 CFR Part 238 Appendix G	Alternative Requirements for Evaluating the Crashworthiness and Occupant Protection Performance of a Tier I Passenger Trainset	Structure and Crashworthiness	49 CFR Part 238 Appendix G to replace 49 CFR Part 238.203, 49 CFR Part 238.205, 49 CFR Part 238.207, 49 CFR Part 238.211, 49 CFR Part 238.213 and 49 CFR Part 238.219.		
49 CFR Part 238 Subpart H	Specific Requirements for Tier III Passenger Equipment	Structure and Crashworthiness; Braking System; Interior Design; Lighting; Cab Design; Bogie Requirements			
49 CFR Part 238 Subpart I	Inspection, Testing, and Maintenance Requirements for Tier III Passenger Equipment	Maintainability			
49 CFR Part 238.15	Movement of Passenger Equipment with Power Brake Defects	Braking System; Maintainability	As referenced by 49 CFR Part 238.803		
49 CFR Part 238.103	Fire Safety	Fire Systems; Cab Design; Lighting; On Train Monitor and Recorder; Signaling and Control			
49 CFR Part 238.105	Train Electronic Hardware and Software Safety	Signaling and Control; Cab Design; On Train Monitor and Recorder			
49 CFR 238.111	Pre-Revenue Service acceptance testing plan.	Testing			
49 CFR Part 238.113	Emergency Window Exits	Structure and Crashworthiness; Interior Design	As optioned by 49 CFR Part 238.741		
49 CFR Part 238.114	Rescue Access Windows	Structure and Crashworthiness; Interior Design	As optioned by 49 CFR Part 238.741		
49 CFR Part 238.115	Emergency Lighting	Lighting	As referenced by 49 CFR Part 238.743		

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49 CFR Part 238.117	Protection against Personal Injury	Structure and Crashworthiness; High/Low Voltage Electrical Equipment; Cab Design; Lighting; On Train Monitor and Recorder			
49 CFR Part 238.121	Emergency Communication	Interior Design; Passenger Information and Communications			
49 CFR Part 238.123	Emergency Roof Access	Structure and Crashworthiness; Interior Design			
49 CFR Part 238.203	Static End Strength	Structure and Crashworthiness	49 CFR Part 238.703 and 49 CFR Part 238.705 to replace 49 CFR Part 238.203		
49 CFR Part 238.205	Anti-Climbing Mechanism	Structure and Crashworthiness	49 CFR Part 238.707 to replace 49 CFR Part 238.205		
49 CFR Part 238.207	Link between Coupling Mechanism and Car Body	Structure and Crashworthiness	49 CFR Part 238.707 to replace 49 CFR Part 238.207		
49 CFR Part 238.209	Forward End Structure of Locomotives, Including Cab Cars and MU Locomotives	Structure and Crashworthiness	49 CFR Part 238.709 and 49 CFR Part 238.711 to replace 49 CFR Part 238.209		
49 CFR Part 238.211	Collision posts strength for Cab and non-Cab end structure integrity	Structure and Crashworthiness	49 CFR Part 238.711 and 49 CFR Part 238.713 to replace 49 CFR Part 238.211 and 49 CFR Part 238.213		
			238.211 continue to apply to semi-permanently coupled articulated equipment.		
49 CFR Part 238.213	Corner Posts	Structure and Crashworthiness	49 CFR Part 238.711 and 49 CFR Part 238.713 to replace 49 CFR Part 238.211 and 49 CFR Part 238.213		
49 CFR Part 238.215	Rollover Strength	Structure and Crashworthiness	As referenced by 49 CFR Part 238.715		
49 CFR Part 238.217	Side Structure	Structure and Crashworthiness	As referenced by 49 CFR Part 238.715		
49 CFR Part 238.219	Truck-to-Car-Body Attachment	Structure and Crashworthiness	As optioned by 49 CFR Part 238.717		
49 CFR Part 238.221	Glazing	Structure and Crashworthiness			
49 CFR Part 238.225	Electrical System	Operating Environment; Traction/Propulsion System; High/Low Voltage Electrical Equipment			
49 CFR Part 238.227	Suspension System	Bogie Requirements			
49 CFR Part 238.230	Safety Appliances – New Equipment	Structure and Crashworthiness			
49 CFR Part 238.231	Brake System	Braking System	49 CFR Part 238.731 will govern		
49 CFR Part 238.233	Interior Fittings and Surfaces	Structure and Crashworthiness; Cab Design	As optioned by 49 CFR Part 238.733 and inclusive of APTA SS-C&S-006, Rev. 1		
			As optioned by 49 CFR Part 238.735 and inclusive of APTA SS-C&S-016, Rev 2		
			As referenced by 49 CFR Part 238.735 and inclusive of AAR-RP-5104		
			As optioned by 49 CFR Part 238.737		
49 CFR Part 238.235	Doors	Interior Design; Door Systems			
49 CFR Part 238.313	Class I Brake Test	Braking System	As referenced by 49 CFR Part 238.803		
49 CFR Part 238.403	Crash Energy Management	Structure and Crashworthiness	49 CFR Part 238.703 and 49 CFR Part 238.705 will govern		
49 CFR Part 238.405	Longitudinal Static Compressive Strength	Structure and Crashworthiness	49 CFR Part 238.703 and 49 CFR Part 238.705 will govern		
49 CFR Part 238.407	Anti-Climbing Mechanism	Structure and Crashworthiness	49 CFR Part 238.707 will govern		
49 CFR Part 238.409	Forward End Structures of Power Car Cabs	Structure and Crashworthiness	49 CFR Part 238.709 and 49 CFR Part 238.711 will govern		
49 CFR Part 238.411	Rear End Structures of Power Car Cabs	Structure and Crashworthiness	49 CFR Part 238.713 will govern		
49 CFR Part 238.413	End Structures of Trailer Cars	Structure and Crashworthiness	49 CFR Part 238.713 will govern		
49 CFR Part 238.415	Rollover Strength	Structure and Crashworthiness	49 CFR Part 238.715 will govern		

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49 CFR Part 238.417	Side Loads	Structure and Crashworthiness	49 CFR Part 238.715 will		
49 CFR Part 238.419	Truck-to-Car-Body and Truck Component Attachment	Structure and Crashworthiness	49 CFR Part 238.717 will		
49 CFR Part 238.425	Electrical System	Operating Environment; Traction/Propulsion System; High/Low Voltage Electrical Equipment; Cab			
49 CFR Part 238.427	Suspension System	Bogie Requirements			
49 CFR Part 238.428	Overheat Sensors	Bogie Requirements			
49 CFR Part 238.429	Safety Appliances	Structure and Crashworthiness; Braking System; Door Systems; Couplers			
49 CFR Part 238.431	Brake System	Braking System	49 CFR Part 238.731 will govern		
49 CFR Part 238.435	Interior Fittings and Surfaces	Structure and Crashworthiness; Cab Design; Lighting	49 CFR Part 238.733, 49 CFR Part 238.735, and 49 CFR Part 238.737 will govern		
49 CFR Part 238.439	Doors	Structure and Crashworthiness; Interior			
49 CFR Part 238.441	Emergency Roof Access	Structure and Crashworthiness; Interior			
49 CFR Part 238.443	Headlights	Lighting			
49 CFR Part 238.445	Automated Monitoring	On Train Monitor and Recorder; Passenger Information and Communications			
49 CFR Part 238.447	Train Operator's Controls and Power Car Cab Layout	Structure and Crashworthiness; Cab			
49 CFR Part 238.501	Scope	Maintainability	49 CFR Part 238.801 will		
49 CFR Part 238.503	Inspection, Testing, and Maintenance Requirements	Maintainability	49 CFR Part 238.803 and 49 CFR Part 238.805 will govern		
49 CFR Part 238.703	Occupied Volume Integrity	Structure and Crashworthiness			
49 CFR Part 238.705	Dynamic Collision Scenario	Structure and Crashworthiness			
49 CFR Part 238.707	Override Protection	Structure and Crashworthiness			
49 CFR Part 238.709	Fluid Entry Inhibition	Structure and Crashworthiness			
49 CFR Part 238.711	End Structure Integrity of Cab End	Structure and Crashworthiness			
49 CFR Part 238.713	End Structure Integrity of Non-Cab End	Structure and Crashworthiness			
49 CFR Part 238.715	Roof and Side Structure Integrity	Structure and Crashworthiness			
49 CFR Part 238.717	Truck Attachment	Structure and Crashworthiness			
49 CFR Part 238.721	Glazing	Structure and Crashworthiness; Cab Design			
49 CFR Part 238.731	Brake System	Braking System; Cab Design			
49 CFR Part 238.733	Interior Fixture Attachment	Structure and Crashworthiness; Lighting			
49 CFR Part 238.735	Seat Crashworthiness (Passenger and Cab Crew)	Structure and Crashworthiness			
49 CFR Part 238.737	Luggage Racks	Structure and Crashworthiness			
49 CFR Part 238.741	Emergency Window Egress and Rescue Access	Structure and Crashworthiness			
49 CFR Part 238.743	Emergency Lighting	Lighting			
49 CFR Part 238.751	Alerters	Cab Design			
49 CFR Part 238.753	Sanders	Bogie Requirements; Braking System			
49 CFR Part 238.805	Periodic Tests; Brake Systems	Braking System			
49 CFR Part 239	Passenger Train Emergency Preparedness	Structure and Crashworthiness; Interior Design; Fire Systems; Door Systems; Unit Safety Principles			
49 CFR Part 239.101	Emergency Preparedness Plan	Interior Design; Fire Systems			
49 CFR Part 239.107	Emergency Exits	Structure and Crashworthiness; Interior Design; Door Systems			
49 CFR Part 240	Qualification and Certification of Locomotive Engineers	Driving Simulator; Quality Software			
49 CFR Part 240.7	Definitions	Driving Simulator; Quality Software Assurance			
49 CFR Part 270	System Safety Program Plan	Unit Safety Principles			
49 CFR Part 393.77	Heaters	Heating, Ventilation, and Cooling			
49 USC 20107	Inspection and Investigation	Cab Design			
49 USC 20302		General Requirements			
49 USC 20306		Exemption for Technological			
APTA SS-E-013-99		Emergency Lighting			
APTA SS-M-014-06	Standard for Wheel Load Equalization of Passenger Railroad Rolling Stock	Bogie Requirements	As required by FRA Safety Advisory 2013-02: Class R		
APTA SS-PS-002-98		Emergency Signage			
APTA SS-PS-004-99		Low Level Exit Path Marking (LLEPM)			
DOT/FRA/ORD-11/22	Technical Criteria and Procedures for Evaluating the Crashworthiness and Occupant Protection Performance of Alternatively-Designed Passenger Rail Equipment for Use on Tier I Service	Structure and Crashworthiness			
ETF 001-02	Proposed Ruletext for NPRM	Structure and Crashworthiness			
ETF 016-03	Tier III Cab Glazing Task Group Recommendations	Structure and Crashworthiness			
FRA-2006-25273	Passenger Train Emergency Systems II: Proposed Rule				
FRA-2007-0010	APTA Petition to FRA to Use APTA SS-M-016-06 for "Cars of Special Construction"	Door Systems			
FRA-2009-0036, Notice No. 2	Vehicle/Track Interaction Safety Standards; High Speed and High Cant Deficiency Operations	Bogie Requirements			
FRA-2011-0060	System Safety Program Plan	Unit Safety Principles			
FTA-IT-90-5001-02.1	Quality Assurance and Quality Control Guidelines	Quality Software Assurance			
FTA-VA-90-1003-06	Transit Noise and Vibration Impact Assessment	Noise and Vibration			
GM/RT 2100 (Issue 4, December	Requirements For Railway Vehicles Structures	Structure and Crashworthiness			
MP&E 98-14	Safety Appliance Securement	Structure and Crashworthiness			

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NFPA 130	Standard for Fixed Guideway Transit and Passenger Rail Systems	Fire Systems			
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