Street lighting standards — USA

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Standards and rules in the USA

Topic	Main references
Road lighting	ANSI/IES RP-8, AASHTO Roadway Lighting Design Guide, state DOT manuals
Light pollution	IES TM-15 (BUG ratings), IES/IDA Model Lighting Ordinance
Electrical installation	NEC (NFPA 70), with state and local amendments. NESC (IEEE C2) for utility-owned overhead systems.
Supply	ANSI C84.1 (voltage ranges), 60 Hz
Roadway equipment	ANSI C136 series: C136.10 (photocontrol socket), C136.41 (dimming receptacle), C136.37 (solid-state roadway luminaires), C136.2 (surge)
Product safety	UL 1598 (luminaires), UL 8750 (LED equipment), UL 773 (photocontrols), listing by an NRTL
Radio and EMC	FCC Part 15
Efficiency and rebates	DLC Qualified Products List
Poles	AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals
Safe work	OSHA 1910.147 (lockout/tagout), 1910.269, 1926 Subpart V, NFPA 70E, ANSI/SAIA A92 (aerial work platforms)
Traffic control	MUTCD Part 6
Cybersecurity	NIST IR 8259, state laws such as California SB-327
Procurement and funding	Build America, Buy America Act for federally funded projects; energy savings performance contracts (ESPC)
Carbon	EPA eGRID emission factors

International: road lighting

Standard	Covers
CIE 115	International recommendation for road lighting
CIE 140	Road lighting calculations
CIE 150	Limits for obtrusive light
EN 13201-5	Energy indicators PDI and AECI, useful anywhere

International: luminaires, LEDs, and drivers

Standard	Covers
IEC 60598-1, 60598-2-3	Luminaire safety; road and street luminaires
IEC 62722-2-1, IEC 62717	Performance of LED luminaires and modules
IEC 61347-1, -2-13	Safety of LED control gear
IEC 62471	Photobiological safety
IEC 60529, IEC 62262	IP and IK ratings
IEC 61000-3-2, CISPR 15, IEC 61547	Harmonics, emissions, immunity
IEC 61643-11	Surge protection devices
IES LM-79, LM-80, TM-21	Luminaire photometry, LED lumen maintenance, lifetime projection

Standard	Covers
IES LM-63, EULUMDAT	Photometric file formats
Zhaga Book 15	Replaceable LED modules for outdoor luminaires

International: controls and connectivity

Standard	Covers
Zhaga Book 18, Zhaga-D4i	Node and sensor interface; joint certification with D4i
ANSI C136.10, C136.41	NEMA photocontrol and dimming receptacles (used well beyond the USA)
IEC 62386 (DALI, DALI-2)	Digital lighting control
IEC 62386-250 to -253	D4i: power, luminaire data, energy, diagnostics
IEC 60929 Annex E	1–10 V dimming
TALQ, uCIFI	CMS interoperability and smart city data model
LoRaWAN, Wi-SUN, 3GPP LTE-M/NB-IoT	Field networks
MQTT, OMA LwM2M	Device messaging and management
IEC 62443	Industrial control system security

International: management systems

Standard	Covers
EN 13306, EN 15341	Maintenance terms and KPIs
ISO 55000 to 55002	Asset management
ISO 50001, ISO 50015, IPMVP	Energy management, measurement and verification
ISO 9001, 14001, 45001	Quality, environment, occupational safety
ISO/IEC 27001	Information security management
GHG Protocol	Carbon accounting (Scope 1, 2, 3)
IEC 62124, 62509, 62619, 61215, 61730	Solar street light systems, charge controllers, batteries, PV modules

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