New Jersey Turnpike Authority
P.O. Box 5042, Woodbridge, NJ 07095

July 18, 2025

Document Change Announcement

2007 Design Manual

Light Pole Foundations

DCA2025DM-04

Subject: Revisions to

Section 8 Lighting and Power Distribution Systems, Subsection 8.3 Lighting Equipment and Materials

Description of Change:

This DCA contains miscellaneous updates to lighting standards. A Design Manual and Standard Drawing DCA have been released in conjunction with each other. A summary of changes is appended to this announcement.

Notice to New Jersey Turnpike Authority Staff and Design Consultants

Effective immediately, all contracts currently in the design phase shall incorporate the revisions herein. For advertised contracts awaiting the opening of bids this revision shall be incorporated via addendum. Contact your New Jersey Turnpike Authority Project Manager for instruction.

The revisions may be accessed on the Authority's webpage: https://www.njta.com/doing-business/professional-services

Recommended By:

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Distribution: Senior Staff Engineering, Law, Maintenance & Operations Depts., All Prequalified Consultant Firms, File

DCA2025SD-02 Standard Drawings

Published Standard Drawing	Prior Title	Prior Date	Prior Version	New Title	New Date	New Version	Summary of individual sheet changes
E-01	LIGHTING STANDARD KEY SHEET	1/2024	1	(NO CHANGE)	7/2025	2	Light Pole Base Types are updated with foundation depths for specific light pole types.
E-02	STEEL LIGHTING STANDARD	1/2024	1	(NO CHANGE)	7/2025	2	Steel light pole design standards and mounting hardware are updated. Design specifications for wind loading are moved to the Design Manual. Requirements for shop drawings and light pole installation hardware are standardized and clarified.
E-03	ALUMINUM LIGHTING STANDARD	9/2021	0	(NO CHANGE)	7/2025	1	Design requirements and grounding details are clarified.
E-07	HIGHMAST LIGHTING STANDARDS DETAIL - 2	1/2024	1	(NO CHANGE)	7/2025	2	Added limitations for Ground Rod installation and guidance for High Mast Pole installation location.
E-09	TRANSFORMER BASE AND POLE GROUNDING DETAILS	1/2024	1	(NO CHANGE)	7/2025	2	Clarified transformer base mounting hardware dimensions.
E-10	LIGHTING STANDARD ANCHOR BOLT DETAILS	9/2021	0	(NO CHANGE)	7/2025	1	Updated details for vibration damping pad and direction for bolt circle diameters.
E-11	LIGHTING STANDARD CONCRETE BASE	1/2024	1	(NO CHANGE)	7/2025	2	Concrete light pole foundation depths are updated for specific light pole types.
E-12	JUNCTION BOX FOUNDATION	9/2021	0	(NO CHANGE)	7/2025	1	Anchor bolt and bolt circle details are updated. Ground rod installation, rebar, wall thickness, and cable rack details are clarified.
E-13	JUNCTION BOX TYPE C	9/2021	0	(NO CHANGE)	7/2025	1	Added clarification to the installation of a ground rod.
E-33	TYPE F LOAD CENTER DETAILS - 2	9/2021	0	(NO CHANGE)	7/2025	1	A terminal block is added prior to the Item C contactor to avoid multiple conductors installed on single terminal contacts.
E-35	TYPE G LOAD CENTER DETAILS - 2	9/2021	0	(NO CHANGE)	7/2025	1	A terminal block is added prior to the Item C contactor to avoid multiple conductors installed on single terminal contacts.
BR-15	PARAPET LIGHTING BLISTER AND TYPE D JUNCTION BOX DETAILS	10/2022	1	(NO CHANGE)	7/2025	2	Damping pad and dimensions are updated to agree with the steel light pole assembly mounting details.

DCA2025DM-04 Design Manual

Summary of Changes to Design Manual:

1. Section 8.3.1.1 (Light Pole Type and Construction) of the Design Manual is revised to include language regarding above grade lighting standards and design requirements.
2. Section 8.3.1.2. (Light Pole Arrangement), Item No 14 is updated to clarify design direction for ground-mounted lighting standards installed within the clear zone and protection for those lighting standards.
3. Section 8.3.3 (Highmast and Floodlighting Systems) of the Design Manual is revised to clarify design direction for Highmast Lighting Standards installed within the clear zone and protection for those lighting standards.
4. Section 8.3.13 (Lighting Standard Bases and Junction Box Foundations) of the Design Manual is revised to add direction that non-standard foundations shall be designed and sized accordingly.

NOTE: All text herein are REVISIONS, as indicated by the tracked changes, to the latest version of the Design Manual.

SECTION 8 – LIGHTING AND POWER DISTRIBUTION SYSTEMS

8.3. LIGHTING EQUIPMENT AND MATERIALS

8.3.1. Roadway Lighting Standards

8.3.1.1. Light Pole Type and Construction

Except for Highmast Lighting Systems, ground-mounted lighting standards typically mounted on precast concrete bases or Junction Box Foundations via breakaway transformer bases shall be aluminum alloy, equipped with single, double, or triple tenon luminaire mounting adapters. Bridge/wall/structure-mounted lighting standards shall be steel, equipped with single or double tenon luminaire mounting adapters as shown on the Current Standard Drawings, and mounted via shoe bases. In some existing and retrofit Turnpike installations, lighting standards may be a shoe base mounted via parapet bracket to the side of the parapet. See Current Standard Drawings for details.

All light poles shall be designed in accordance with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*. See Section 3 (Structures) of this Manual, and specific information on the Current Standard Drawings for more information.

All designs shall consider the bridge mounted lighting standard height above local grade below the bridge but shall not be considered at less than 135 feet above grade and at basic wind speeds less than 110 mph. Shop drawings shall include all details and dimensions required to fabricate the lighting standard(s) and furnish all appurtenant hardware. Design calculations submitted as shop drawings shall be prepared in accordance with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, current edition. Bridge mounted lighting standards shall not be considered as 'common poles' and therefore shall include strength and fatigue design load cases. For the purposes of fatigue design, vortex shedding load case, natural wind gust load case, and fatigue importance category (if) = 1.0 shall be considered.

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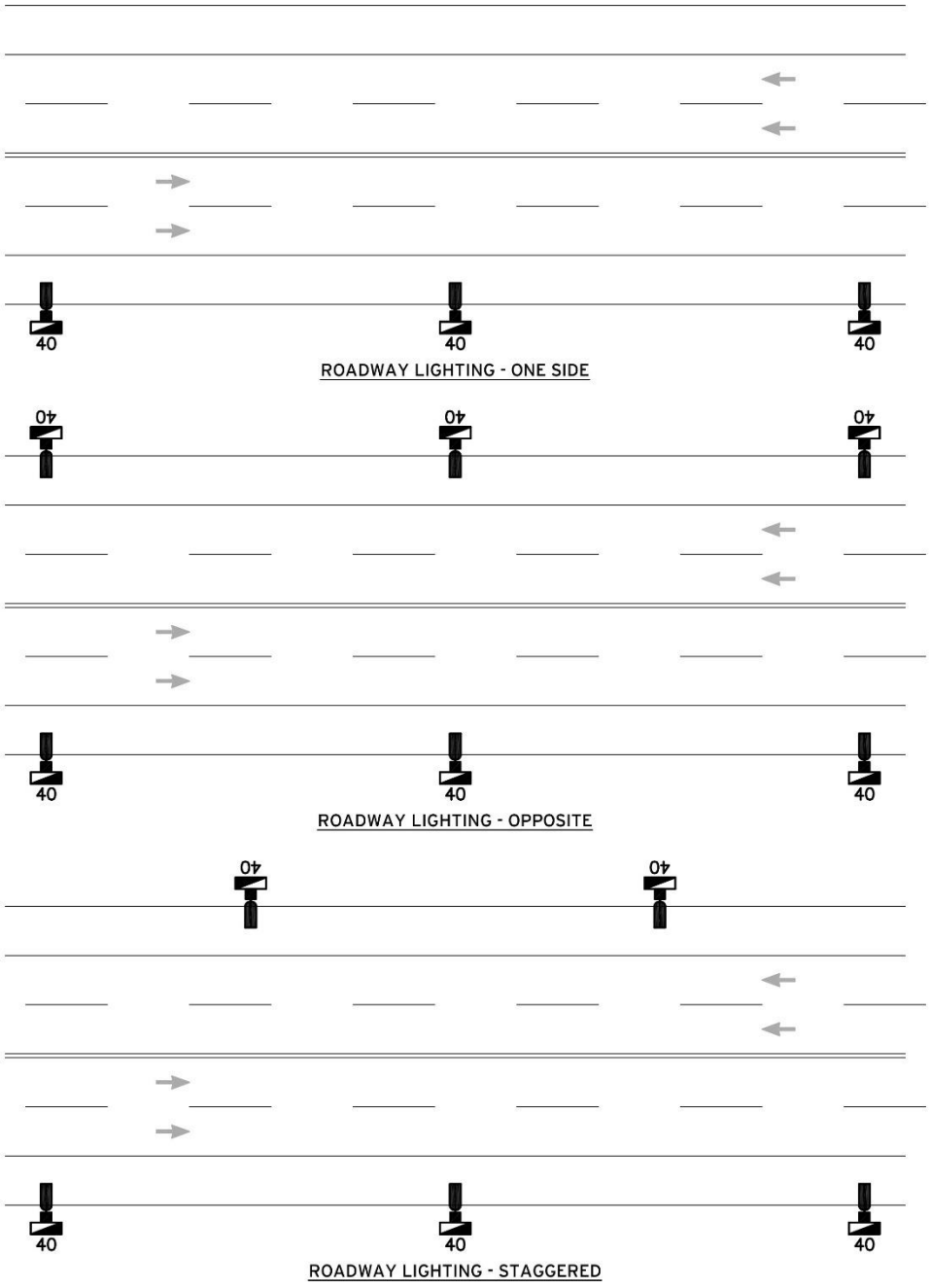
8.3.1.2. Light Pole Arrangement

Type, arrangement, and location of lighting standards to be used in various areas shall conform to the following design criteria:

1. Lighting standards shall be arranged in one of the following three (3) methods; one-sided, opposite, staggered. Installation of Lighting Standard on a median barrier shall require prior approval by the Authority. An illustration of these arrangements follows in Exhibit 8-19. Selection of the method shall be based on the engineering analyses shown to produce the most effective and economical lighting system. The Engineer shall analyze both installation methods to determine the recommended scenario and shall describe the analysis as part of the submission report. Except where non-symmetrical geometry is encountered, lighting shall be evenly spaced and staggered to yield a pleasing visual appearance. See Subsection **Error! Reference source not found.** for more information regarding aesthetic treatment of lighting installations.

Exhibit Error! No text of specified style in document.-1 Typical Roadway Lighting Standard Arrangements



2. Avoid placing 40-foot lighting standards within 60 feet of a physical gore, ramp, taper, or other roadway geometry where the pole may block the entire ramp or roadway if it were to fall. Use of 40-foot lighting standards in these locations may only be permitted if the Engineer demonstrates that no combination of 26-foot poles is For pole-top cutoff lighting designs using 26-foot poles, Type LP1 or LP2

fixtures shall be permitted on roadways up to 48 feet wide, provided that the Design Criteria is satisfied and the Engineer can justify their use in lieu of 40-foot poles because of specific project-related constraints, efficiencies, or impacts to non-Authority property. 26-foot lighting standards shall be used on ramps and within 60 feet of a physical gore, ramp, taper, or other roadway geometry that could be blocked by a 40-foot pole if it were to fall.

3. Mast arm lighting system installations shall require pre-approval or direction from the Authority. Lighting standards with 26-foot nominal mounting heights (and 30 foot heights where retrofit poles are specifically approved) shall be used for ramps and within 60 feet of a physical gore, ramp, taper or other roadway geometry that could be blocked by a 40-foot pole if it were to fall. 40-foot poles shall be used for mainline roadway illumination. All mast arm lighting shall be equipped with approved luminaires from the Qualified Products List.

4. Bridge-mounted or parapet-mounted lighting standards shall be 26-foot nominal mounting height. 40-foot poles may only be bridge-mounted or parapet-mounted where the Engineer demonstrates that 26-foot poles cannot light the ramp or roadway within the criteria. For ramp lighting over another roadway, pole installation on the bridge shall be avoided. In any case where the design criteria cannot be met with 26’ poles off the bridge, the preference is to place the least number of 26’ poles on the bridge structure as necessary to meet the required criteria. The 26’ poles in this case shall be mounted nearest to the ends of the bridge or bridge support. Use of 40’ poles on elevated structures or over another roadway shall require approval from the Authority.

5. Lighting standards shall be located along the wide shoulder (10 ft. and 12 ft.) edge of all ramps and mainline roadways in order to facilitate maintenance and re-lamping. In very wide gore areas, however, it shall be permissible to install a small number of supplementary lighting standards along the opposite shoulder in order to achieve illuminance requirements.

6. When a lighting standard is to be located within the vicinity of an exit gore area, a minimum of 50 ft. clearance should be provided beyond the physical bullnose.

7. Lighting standards adjacent to overpasses shall be located to avoid glare affecting traffic on overpasses. Additionally, light cutoff angles produced by structural members should be analyzed when locating

such lighting standards. Preferably, the lighting standards should be located equidistant from overpass structures. If this cannot be achieved, a minimum clearance of 35 feet (for 26-foot poles) and 50 feet (for 40-foot poles) shall be provided from the face of parapet of a typical overpass (with standard minimum vertical clearance).

8. Lighting standards adjacent to overhead sign structures should be located equidistant from such structures, if feasible, otherwise minimum clearance requirements set forth for the overpass structures shall be provided.

9. Opposite lighting standard arrangements (see

10. Exhibit Error! No text of specified style in document.-1) shall be used in toll plaza areas, except at certain narrow toll plazas where required illuminance levels and uniformity ratios can effectively be achieved by one-sided arrangement. Lighting from the median or median barrier will not be approved.

11. Ground-mounted lighting standards shall be installed on concrete bases or Junction Box Foundations. Junction box foundations shall be used in lieu of junction boxes and separate concrete bases wherever feasible, while maintaining a standard setback of 3`-6" measured from the edge of pavement to centerline of the lighting standard. Each lighting standard installed on a concrete base shall be provided with a concrete junction box adjacent thereto for cable splicing unless another junction box within the proximity of the lighting standard (up to 50 feet away) can be used for this purpose.

12. Lighting standards on bridge structures shall be located at or as near as possible to piers or abutments to reduce undesirable vibration. Mid-span locations must be avoided whenever possible. See Section 3 (Structures Design) of this Manual for specific locations where lighting standards are allowed. All bridge-mounted light standard mounts shall be capable of supporting all standard Authority poles, up to a height of 40 feet.

13. Lighting Standards shall be installed such that they are located not closer than 20 feet to primary or secondary utility power lines or communication facilities that are mounted to wood or other utility poles. The Engineer shall take into consideration the requirements of the National Electrical Safety Code when designing lighting systems in the vicinity of power distribution lines. Additionally, the Design shall take into consideration the likelihood of pole knockdowns by vehicle impact and ensure that no other critical facility may be rendered inoperable in the event of an accident.

14. The number of various lighting standard assemblies and fixture optics shall be kept to a minimum on each project, for ease of maintenance. Runs of adjacent lighting standards shall be of the same type or fixture. The Engineer shall not alternate lighting standards types, luminaires, or wattages, or install small quantities of non-matching lighting standards in a string of otherwise identical poles. If the Engineer feels there is a valid engineering reason why such a design

is required in lieu of other, more standardized designs, the Engineer shall present this reasoning to the Authority for approval.

15. Ground-mounted lighting standards on breakaway transformer bases may be placed within the roadway clear zone without roadside protection measures. Where guide rail is present for other warranting obstructions within the clear zone, refer to the roadway lighting installation details in the Standard Drawings for lighting standard setback requirements. If the setback requirements cannot be met, the Designer shall consider relocation of the lighting standard away from the guide rail or propose modifications to the guide rail layout for approval by the Authority.

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8.3.3. Highmast and Floodlighting Systems

1. Highmast Lighting systems shall utilize 80- to 100-foot-high galvanized steel towers equipped with four (4) to eight (8) LH1, LH2, or LH3 luminaires as listed in the Qualified Products List, as outlined in the Standard Specifications, or as otherwise approved by the Authority. The number and types of fixtures provided on a given project shall be kept to a minimum.
2. Highmast Lighting Standards shall be located outside of the roadway clear zone. If this condition cannot be met, the Highmast pole and foundation shall be shielded by a roadside protection feature in accordance with Section 4 (Guide Rail / Median Barrier / Attenuator Design) of this Manual and the Standard Drawings ~~shall be located free of the clear zone (usually 30 feet on most roadways) or protected by physical obstruction or a raised foundation.~~
3. Unless otherwise directed, all Highmast poles shall be designed with lowering devices, a bottom-latching chain assembly, lightning protection system, proper Equipment Grounding Conductor (EGC), guide rollers to prevent swaying while the luminaires are being lowered, and a method to safely prevent the ring assembly from rotating or moving unexpectedly when lowered for maintenance.
4. Proper aiming of each fixture, including orientation angle, tilt angle, and appropriate reference angle information, shall be included in the plans for all Highmast Lighting Systems.
5. The Engineer shall provide specific details for all High Mast foundations.

6. It is the Engineer's responsibility to ensure the High Mast Luminaires used in the design dimensionally fit on the head ring and correct optics options are used.

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8.3.13. Lighting Standard Bases and Junction Box Foundations

Construction methods and typical installation details for standard concrete bases, Junction Box Foundations, junction boxes, and roadway lighting manholes shall be in accordance with Standard Specifications and Current Standard Drawings. All other special details required for the Project shall be prepared by the Engineer.

While it is recognized that many existing Parkway lighting systems have the Junction Box Foundations oriented with the boxes closer to the road, all new JBF installations shall be oriented with the pole closer to the roadway on all Authority projects.

Junction Box Foundations shall be used wherever possible. Concrete Light Standard Bases with separate Type C or Type D Junction Box shall be used only where specific right of way or project constraints prevent the installation of Junction Box Foundations.

If a lighting standard to be installed or replaced is not a current standard, or if conditions exist that fall outside of the standard, a complete foundation design shall be performed by the Engineer in accordance with the AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. This design shall include the development of loads imparted onto the foundation and a site-specific foundation design accounting for the soil conditions and properties at the subject location.

Junction box and Junction Box Foundations shall not be installed in areas where the grade is greater than 4:1. Junction boxes and junction box foundation locations shall be investigated to determine if grading is required, or slopes are too steep (greater than 4:1) for installation. Engineers are to review existing and proposed grading in the area of each junction box. The Engineer shall determine the type of erosion control around all boxes on slopes and include it in the plans. Standard guiderail offset, grading, and berm dimensional requirements shall be as directed in the Standard Drawings.

Additional requirements for underground junction boxes, handholes, and manholes may be found in Subsection 8.4.4.1.