

ICC-ES Evaluation Report


ESR-3765

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DIVISION: 03 00 00— CONCRETE Section: 03 41 00— Precast Structural Concrete Section: 03 48 00— Precast Concrete Specialties	REPORT HOLDER: MUSCO SPORTS LIGHTING, LLC	EVALUATION SUBJECT: PRESTRESSED CONCRETE BASES	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, [International Building Code® \(IBC\)](#)

Properties evaluated:

- Structural
- Durability

2.0 USES

Musco Sports Lighting's (MUSCO) prestressed concrete bases (bases) described in this report are used as embedded pole foundations for hollow tapered steel poles which support light fixtures.

3.0 DESCRIPTION

The bases are manufactured prestressed concrete hollow cylinders produced by a spinning process in a controlled factory environment. The bases are manufactured from normal-weight concrete with a minimum compressive strength of 9,500 psi (65.5 MPa) at 28-days. Their construction and manufacturing is in accordance with ASTM C1804. The base has a tapered end protruding above finish grade, to allow for the placement of a hollow steel pole with a matching taper over the concrete base. See [Figure 1](#) for an illustration of a typical base. The base ends are sealed with an epoxy coating. The concrete used for the bases complies with the requirements shown in Table 19.3.2.1 of ACI 318-19 for exposure classes F2 and C1, defined in Table 19.3.1.1 of ACI 318-19, as applicable.

4.0 DESIGN AND INSTALLATION

The bases must be installed in accordance with MUSCO's published installation instructions, the applicable code, the approved plans, and this report. If there is a conflict between the plans submitted for approval and this report, this report governs.

The base must be placed directly into the ground with the tapered end protruding above finish grade and the hole backfilled. See [Table 1](#) of this report for base sizes, protrusion above finished grade, bending moment design strength and axial design strength. The bending moment design strength applies to the bottom diameter section at the top of the backfill.

5.0 CONDITIONS OF USE:

The prestressed concrete bases described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The bases must be installed in accordance with the applicable code, the approved plans and this report.
- 5.2 Complete plans and calculations demonstrating compliance with this report must be submitted to the code official for approval when required. The calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.3 The adequacy of the soil and backfill to resist the bearing pressure and overturning moment applied by the bases is outside the scope of the report and must be justified to the satisfaction of the code official.
- 5.4 The adequacy of the hollow steel pole and other materials attached to the bases to resist applied loads is outside the scope of this report.
- 5.5 The bases must not be field modified (e.g. cut, drilled, torched, etc.) in any way.
- 5.6 The bases are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Design calculations in accordance with ACI 318.
- 6.2 Test reports of full scale bending test conducted in accordance with ASTM C1824-16.
- 6.3 Quality documentation in accordance with [ICC-ES Acceptance Criteria for Quality Documentation \(AC10\)](#), dated May 2022.

7.0 IDENTIFICATION

- 7.1 The prestressed concrete bases bear the name of the report holder (Musco Sports Lighting, LLC), bottom diameter, date of manufacture, and the evaluation report number (ESR-3765).
- 7.2 The report holder's contact information is the following:

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100 1ST AVENUE WEST
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www.musco.com
lighting@musco.com

TABLE 1—PRESTRESSED CONCRETE BASES¹

BOTTOM DIAMETER (inches)	TIP DIAMETER (inches)	BASE LENGTH (ft-in)	TAPER LENGTH (in)	PROTRUSION ABOVE FINISHED GRADE (inches)	BENDING MOMENT DESIGN STRENGTH ^{2,3} (ft-kips)	ALLOWABLE AXIAL STRENGTH ² (kips)
9 ⁹ / ₁₆	8 ¹ / ₂	15-2	92	86	41	145
12	10 ¹⁵ / ₁₆	17-3	92	87	81	213
13 ³ / ₈	12 ¹ / ₄	20-0	100	96	114	274
15 ³ / ₄	14 ⁹ / ₁₆	22-0	101	96	161	361
18 ¹ / ₄	17 ¹ / ₁₆	23-11	101	95	260	435
20 ⁹ / ₁₆	19 ³ / ₈	26-1	101	97	378	647
23 ³ / ₄	22 ⁹ / ₁₆	27-10	101	94	561	907
28	26 ¹³ / ₁₆	32-0	101	96	994	1093

For SI: 1 inch = 25.4 mm, 1 ft = 305 mm, 1 kip = 1,000 lbf = 4,448.2 N, 1 ft-kip = 1360 Nm

¹The prestressed concrete bases covered by this report are limited to those listed in this table.

²For combined moment loads and axial loads; $\frac{m_a}{M_a} + \frac{a_a}{A_a} \leq 1$

Where: m_a = Bending moment required strength. a_a = Axial required strength.
 M_a = Bending moment design strength. A_a = Axial design strength.

³Values include a reduction factor of $\Phi = 0.9$.

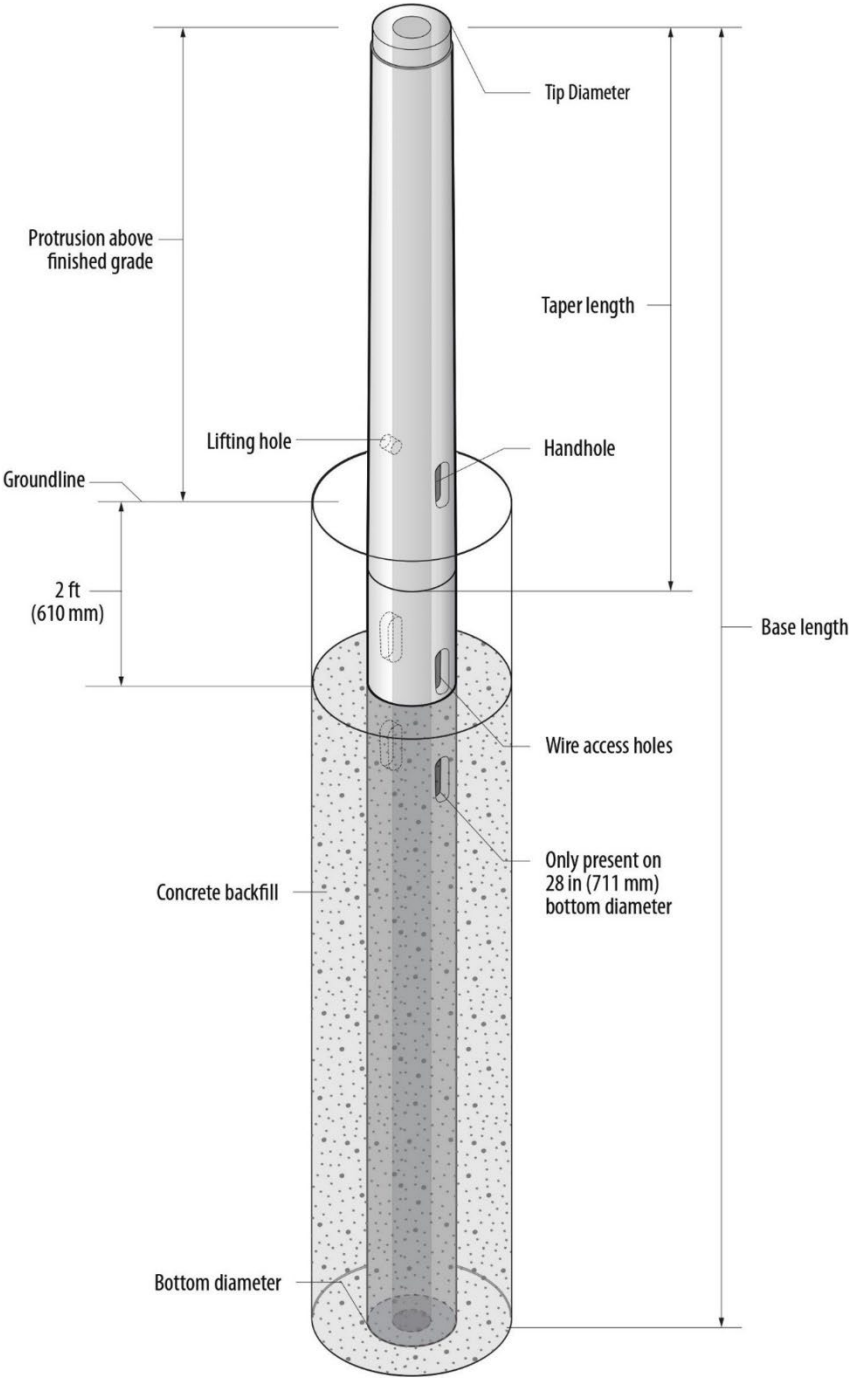


FIGURE 1—PRESTRESSED CONCRETE BASE