



May 30, 2008

In Reply Refer To: HSSD/LS-67

Mr. Travis Rock
Dynamic Lighting Inc.
5220 Shank Rd
Houston, TX 77581

Dear Mr. Rock:

This letter is in response to your request for Federal Highway Administration (FHWA) acceptance of a roadside safety device for use on the National Highway System (NHS).

Name of device: Dynamic Lighting decorative poles and ground stub
Type of device: Luminaire Support
Test Level: Test Level 3 (TL-3)
Testing conducted by: Texas Transportation Institute (TTI)
Date of request: May 6, 2008
Date of follow-up: May 20, 2008

You requested that we find this device acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

Requirements

Roadside safety devices should meet the guidelines contained in the NCHRP Report 350, "Recommended Procedures for the Safety Performance Evaluation of Highway Features". FHWA Memorandum "ACTION: Identifying Acceptable Highway Safety Features" of July 25, 1997 provides further guidance on crash testing requirements of luminaire supports.

Description

The following two Dynamic Lighting decorative luminaire installations were tested at the TTI outdoor pendulum testing facility:

1) Dynamic Lighting pole base 26706B was connected to a fluted luminaire and attached to a Dynamic Lighting ground stub FDDBE36 as shown in the enclosed drawings. The 36-inch (0.91 m) ground stub was installed in NCHRP 350 standard soil. The total height of the base and pole is 13 feet 10 inches (4.22 m). The base is cast aluminum (alloy A319) with an 11-1/2 inch

(292.1 mm) square base bottom tapering to an octagonal shape for a base height of 25-1/4 inches (641.35 mm). Drawings of the Dynamic Lighting pole cast base assembly 26706B, pole, and ground stub FDBE36 are enclosed. The Dynamic Lighting pole base 26706B with luminaire pole was also tested while attached to a rigid steel reaction plate to simulate a fixed anchorage.

2) Dynamic Lighting pole base 26706A was connected to a fluted luminaire and attached to a rigid steel reaction plate to simulate a fixed anchorage. The total height of the base and pole is 15 feet 6 inches (4.72 m). The base is cast aluminum (alloy A319) with a 17 inch (431.8 mm) diameter base bottom tapering to a 5 inch (127 mm) diameter and overall base height is 17-1/4 inches (438.15 mm). A drawing of the Dynamic Lighting pole cast base assembly 26706A and pole is enclosed.

Crash Testing

Your company's decorative lighting poles were tested at TTI's outdoor pendulum testing facility as a surrogate for full-scale crash testing. The pendulum bogie was built according to the specifications of the Federal Outdoor Impact Laboratory's (FOIL) pendulum, and the frontal crush of the aluminum honeycomb nose of the bogie simulated the crush of an actual vehicle. Tests with pendulums are acceptable for most breakaway supports, exceptions being base bending or yielding supports.

Three low speed pendulum tests were conducted on your company's decorative lighting supports, one test on each of the pole installations. Summaries of test results are enclosed. All Decorative Lighting Poles met the NCHRP Report 350 occupant risk criteria.

In tests with Dynamic Lighting pole base 26706B (surface mount and embedded ground stub FDBE36) and Dynamic Lighting pole base 26706A, the base separated from the ground and the lighting pole separated from the decorative base section. The base fractured at ground line and this performance satisfies the FHWA limit of maximum 3.9 inch (100 mm) stub height remaining after a support breaks away.

Findings

In summary, the Dynamic Lighting pole base 26706B (with the surface mount or the embedded ground stub FDBE36) and Dynamic Lighting pole base 26706A with decorative lighting poles, meet the appropriate evaluation criteria for a NCHRP 350 TL-3 device. They may be used at all appropriate locations on the NHS when selected by the contracting authority, subject to the provisions of Title 23, Code of Federal Regulations, Section 635.411 as they pertain to proprietary products. The Dynamic Lighting pole base 26706B (surface mount and embedded ground stub FDBE36) is accepted with luminaire pole mounting heights up to 13 feet 10 inches (4.22 m), with shafts up to 0.188 inch (4.78 mm) wall thickness, and diameters up to 4 inches (101.6 mm). The ground stub FDBE36 must have a 0.188 inch (4.78 mm) wall thickness and embedment length of at least 36 inches (0.91m) in NCHRP standard soil. The Dynamic Lighting pole base 26706A is accepted with luminaire pole heights up to 15 feet 6 inches (4.72 m), with shafts up to 0.155 inch (3.94 mm) wall thickness, and with diameters up to 5 inches (127 mm).

Standard provisions

Please note the following standard provisions that apply to FHWA letters of acceptance:

- This acceptance is limited to the crashworthiness characteristics of the device and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device/system will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device/system being marketed is significantly different from the version that was crash tested, we reserve the right to modify or revoke our acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that it will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance is designated as number LS-67 and shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed at our office upon request.
- The Dynamic Lighting decorative luminaire supports are patented products and considered proprietary. If proprietary devices/systems are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device/system for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device/system, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,

David A. Nicol, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures

FHWA:HSSD:MLupes:tb:x66994:5/21/08

File: s://directory folder/mlupes/LS67-Dynamic Lighting (2).doc

cc: HSSD (Reader, HSA; Chron File, HSSD; M.Lupes, HSSD;
M.Bloschock, HSSD; M.McDonough, HSSD)



1200 New Jersey Ave., S.E.
Washington, DC 20590

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Sincerely yours,



David A. Nicol, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures

DRAWING NOT TO SCALE



DYNAMIC LIGHTING INC.

www.DYNAMICLIGHTING.com
 5220 SHANK ROAD PEARLAND, TX. 77581
 PHONE:(281)997-5400 FAX:(281) 997-5441
 TOLL FREE: (800) 364-0098

Q#26706 S# P#
 Date 9-13-07

REQUEST #
 26706

Name:
 TTI B

LIGHT DISTRIBUTION

- TYPE III REFRACTOR
- TYPE V REFRACTOR
- STANDARD SYMMETRICAL
- TYPE III REFLECTOR
- TYPE V REFLECTOR
- SPECIFY

FINISH

- TBK TEXTURED BLACK
- BLK SMOOTH SATIN BLACK
- GRN GREEN
- GTG GRANITE GREEN
- WHT WHITE
- ATC ANTIQUE COPPER
- CLB CLASSIC BRONZE
- CUSTOM COLOR
- SPECIFY
- STD. Color

VOLTAGE

- 120
- 208
- 240
- 277
- MULTITAP
- 480
- SPECIFY

MH: Metal Halide PL,CF,Q: Compact
 HPS: High Pressure Sodium Fluorescent

LIGHT SOURCE

- 50MH
- 70MH
- 100MH
- 150MH
- 175MH
- 250MH
- Q28
- PL 13
- 50HPS
- 70HPS
- 100HPS
- 150HPS
- 175HPS
- 250HPS
- INCANDESCENT
- SPECIFY
- 26
- 32
- 42

GENERAL

EXTERIOR HARDWARE WILL BE STAINLESS STEEL
 ELECTRICAL COMPONENTS WILL BE ETL LISTED "SUITABLE FOR WET LOCATIONS"

FIXTURE

NONE

BRACKET

NONE

POLE

D4073-14

OTHER COMPONENTS

NONE

DRAWN BY

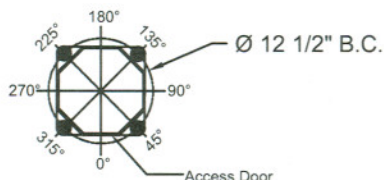
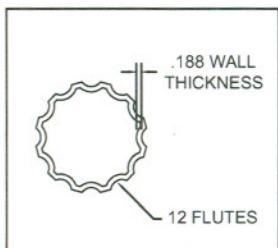
ANW

CHECKED BY

ANW

NOTES

THIS DRAWING SHOULD ACCOMPANY YOUR ORDER
 THANK YOU



FIXTURE DETAILS

Materials

Cast Aluminum Fitter

Electrical

4kv Pulse Rated Socket.
 The Ballast used shall be of the High Power Factor design.

POLE DETAILS

Shaft

Ø4\"/>

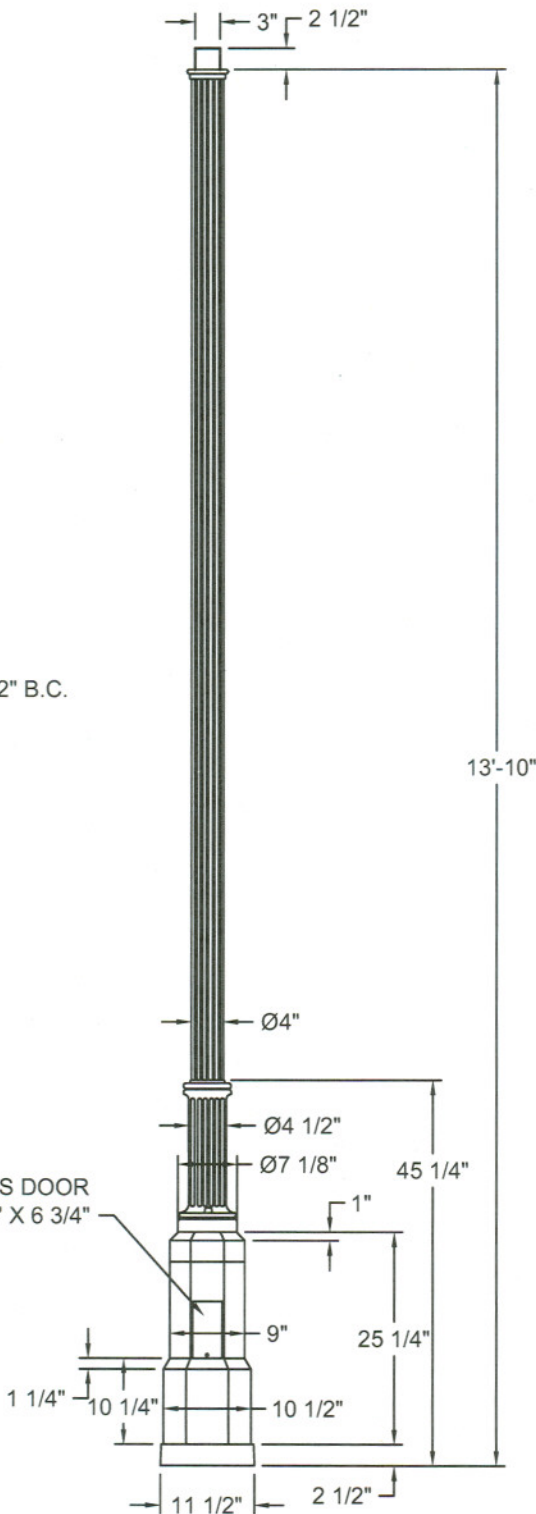
#6005-T5 Aluminum

Base

Cast Aluminum (A319 Alloy)

Finish

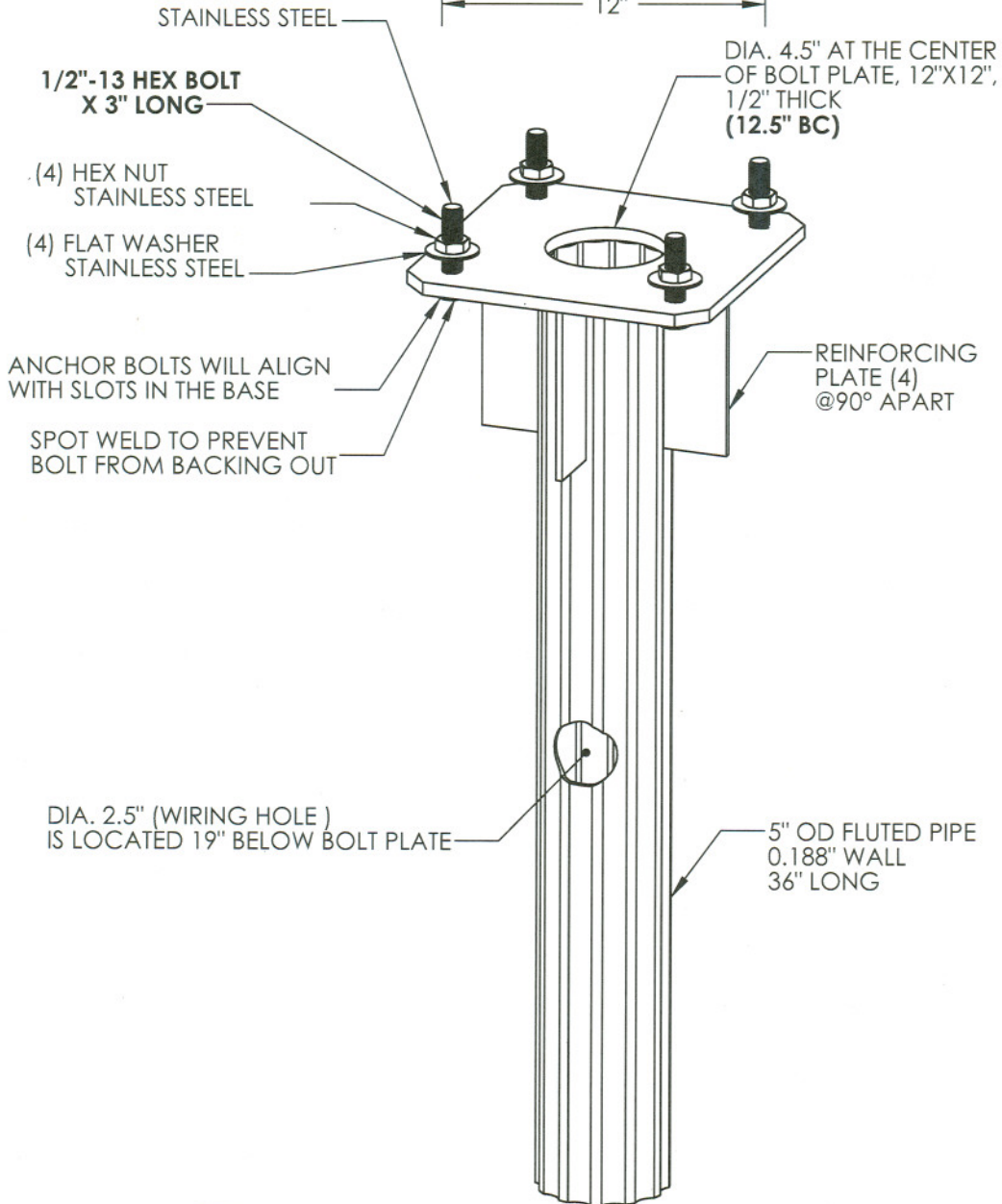
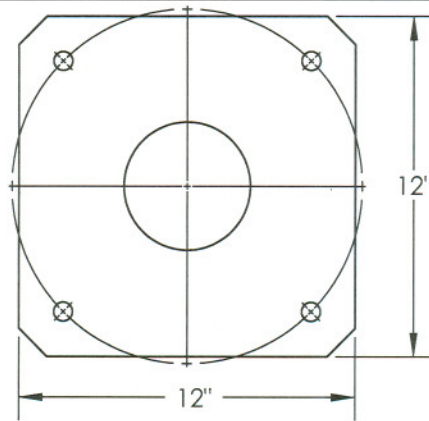
Powder Coat



NOTICE:

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DEPARTMENT		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	NAME	DYNAMIC LIGHTING		
T & D	-		DRAWN			DD
WELDING	-	MATERIAL	CHECKED	FDBE36		
WIRING	-		ENG APPR.			
ASSEMBLY	-		MFG APPR.			
PREP.	-	FINISH	Q.A.			SIZE
EXPEDITOR	-	DO NOT SCALE DRAWING	COMMENTS:		03/24/08	---
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF DYNAMIC LIGHTING. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF DYNAMIC LIGHTING IS PROHIBITED.			SCALE: 1:6.5		WEIGHT:	SHEET 1 OF 1

Table D2. Summary of results for pendulum test 400001-DLI P2.

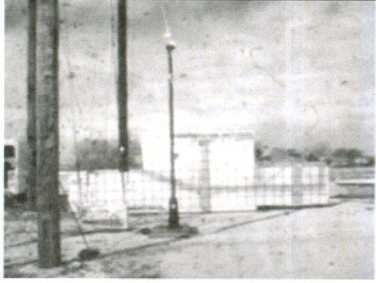
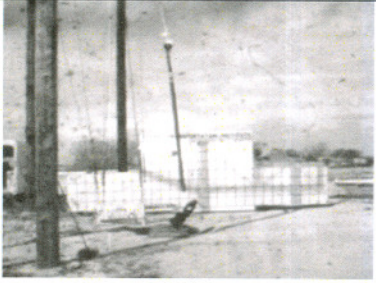
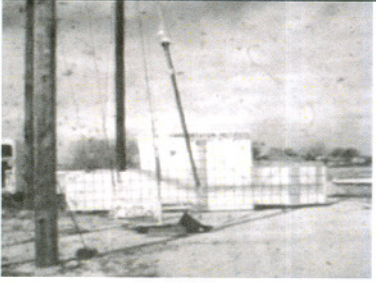
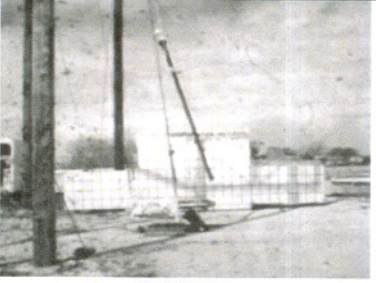

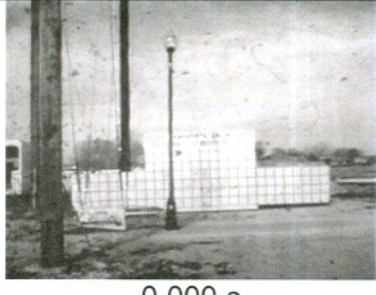

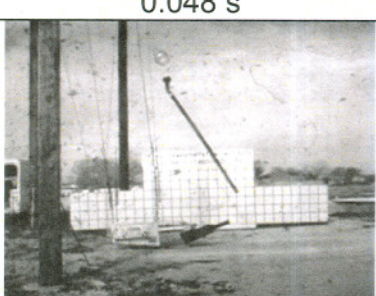
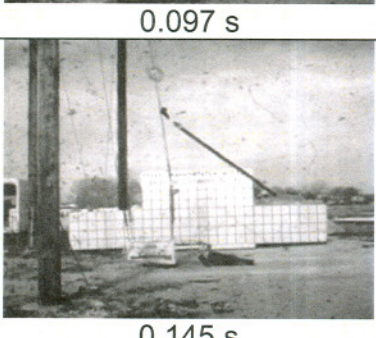
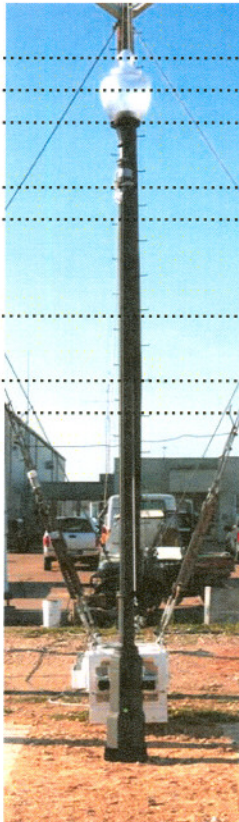
	<p>General Information Test Agency..... Texas Transportation Institute Test No. 400001-DLI P2 Date 2008-03-21</p> <p>Test Article Type.....Lighting Pole Name Dynamic Lighting 26706B Installation Height 16 ft-5 inches Material of Key Element Extruded/Cast Aluminum</p>
	<p>Soil Type..... Rigid Metal Reaction Plate</p> <p>Test Vehicle Type..... Bogie Designation..... Pendulum Test Inertia Mass 839 kg</p>
	<p>Impact Conditions Speed 21.7 mi/h Angle 90 deg</p>
	<p>Occupant Risk Values Impact Velocity Longitudinal direction..... No Contact Ridedown Accelerations Longitudinal direction..... N/A</p> <p>Maximum Change in Velocity 2.2 ft/s</p>
	

Table D1. Summary of results for pendulum test 400001-DLI P1.

 <p>0.000 s</p>	<p>General Information Test Agency..... Texas Transportation Institute Test No. 400001-DLI P1 Date 2008-03-21</p> <p>Test Article Type..... Lighting Pole Name Dynamic Lighting 26706B w/Ground Stub FDBE36 Installation Height 16 ft-5 inches Material of Key Element Extruded/Cast Aluminum</p>
 <p>0.048 s</p>	<p>Soil Type..... Standard Soil</p> <p>Test Vehicle Type..... Bogie Designation..... Pendulum Test Inertia Mass 839 kg</p>
 <p>0.097 s</p>	<p>Impact Conditions Speed 21.7 mi/h Angle 90 deg</p> <p>Occupant Risk Values Impact Velocity Longitudinal direction..... No Contact Ridedown Accelerations Longitudinal direction..... N/A</p>
 <p>0.145 s</p>	<p>Maximum Change in Velocity..... 4.4 ft/s</p> 

DRAWING NOT TO SCALE



DYNAMIC LIGHTING INC.

www.DYNAMICLIGHTING.com
 5220 SHANK ROAD PEARLAND, TX. 77581
 PHONE:(281)997-5400 FAX:(281) 997-5441
 TOLL FREE: (800) 364-0098

Q#26706 S# P#
 Date 9-13-07

REQUEST #
 26706

Name:
 TTI A

LIGHT DISTRIBUTION

- TYPE III REFRACTOR SPECIFY
- TYPE V REFRACTOR
- STANDARD SYMMETRICAL
- TYPE III REFLECTOR
- TYPE V REFLECTOR

FINISH

- TBK TEXTURED BLACK
- BLK SMOOTH SATIN BLACK
- GRN GREEN SPECIFY
- GTG GRANITE GREEN
- WHT WHITE
- ATC ANTIQUE COPPER STD. Color
- CLB CLASSIC BRONZE
- CUSTOM COLOR

VOLTAGE

- 120 277 SPECIFY
- 208 MULTITAP
- 240 480

MH: Metal Halide PL,CF,Q: Compact
 HPS: High Pressure Sodium Fluorescent

LIGHT SOURCE

- 50MH 50HPS SPECIFY
- 70MH 70HPS
- 100MH 100HPS
- 150MH 150HPS
- 175MH 175HPS
- 250MH 250HPS
- Q28 INCANDESCENT
- PL 13 _____
- CF 26 32 42

GENERAL

EXTERIOR HARDWARE WILL BE STAINLESS STEEL
 ELECTRICAL COMPONENTS WILL BE ETL LISTED "SUITABLE FOR WET LOCATIONS"

FIXTURE

NONE

BRACKET

NONE

POLE

D1305-16

OTHER COMPONENTS

NONE

DRAWN BY

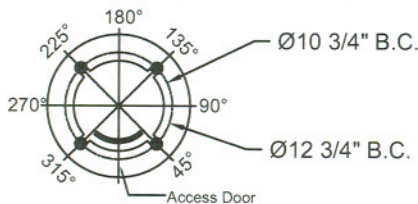
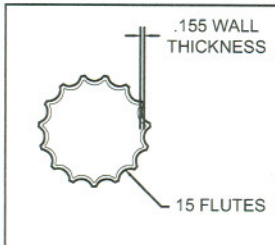
ANW

CHECKED BY

ANW

NOTES

THIS DRAWING SHOULD ACCOMPANY YOUR ORDER
 THANK YOU



FIXTURE DETAILS

Materials

Cast Aluminum Fitter

Electrical

4kv Pulse Rated Socket.
 The Ballast used shall be of the High Power Factor design.

POLE DETAILS

Shaft

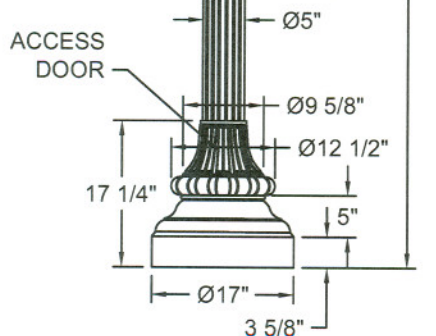
Ø5" Extruded Aluminum
 #6005-T5 Aluminum

Base

Cast Aluminum (A319 Alloy)

Finish

Powder Coat


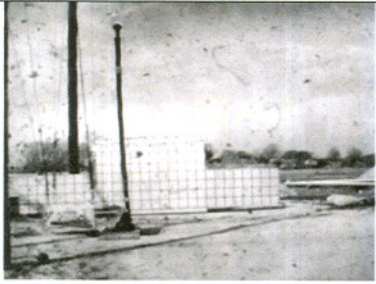
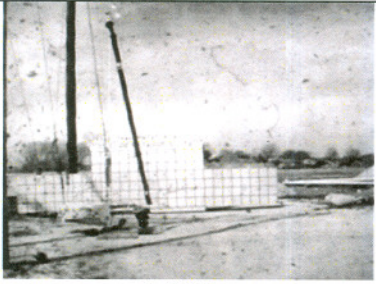



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Table D3. Summary of results for pendulum test 400001-DLI P3.

	<p>General Information Test Agency..... Texas Transportation Institute Test No. 400001-DLI P3 Date 2008-03-21</p> <p>Test Article Type..... Lighting Pole Name Dynamic Lighting 26706A Installation Height 18 ft-3 inches Material of Key Element Extruded/Cast Aluminum</p>
	<p>Soil Type..... Rigid Metal Reaction Plate</p> <p>Test Vehicle Type..... Bogie Designation..... Pendulum Test Inertia Mass 839 kg</p>
	<p>Impact Conditions Speed 21.9 mi/h Angle 90 deg</p>
	<p>Occupant Risk Values Impact Velocity Longitudinal direction..... No Contact Ridedown Accelerations Longitudinal direction..... N/A</p> <p>Maximum Change in Velocity 5.1 ft/s</p>

