Office of Engineering
Project Development Division
Bridge Design Section
PO Box 94245 | Baton Rouge, LA 70804-9245

John Bel Edwards, Governor
Shawn D. Wilson, Ph.D., Secretary

MEMORANDUM

TO: ALL BRIDGE DESIGNERS - IN-HOUSE AND CONSULTANTS

FROM: ZHENGZHENG "JENNY" FU, P.E.
BRIDGE DESIGN ENGINEER ADMINISTRATOR

SUBJECT: BRIDGE DESIGN TECHNICAL MEMORANDUM NO. 107 (BDTM.107) - LUMINAIRE SUPPORT DESIGN AND DETAILING - BDEM PART II, VOLUME 3 - STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS AND LUMINAIRES - REVISION

DATE: November 2, 2021

This BDTM publishes revisions to the following BDEM Sections:

- Part II, Volume 3, Section 1 - Introduction
- Part II, Volume 3, Section 2 - General Features of Design
- Part II, Volume 3, Section 3 - Loads
- Part II, Volume 3, Section 14 - Fabrication, Materials, and Detailing

Clean and redline copies of the above revised Sections are attached.

Implement this BDTM in accordance with BDEM Preface "Implementation Policy of BDEM Revisions."

Recent storm damage assessments have revealed damage to, and failure of, luminaire structural supports due to lack of wind load resistance. This BDEM addresses all lessons learned from such damage and failures.

Summary of Changes under this Revision:

- The title of Volume 3 now indicates all luminaire supports (high mast and low mast).
- Section 1.1 includes added instructions for luminaire foundation design.
- Section 1.1 includes the requirement to use the "Luminaire Schedule." The following (3) documents are required for plan development and are shown in Attachment C:
    - Luminaire Schedule - Excel Spreadsheet used to create the Luminaire Schedule.
    - Sample Luminaire Schedule and Usage Instructions.
    - Design-Regular.ttf - Design font file

The above (3) luminaire schedule documents are available for download from the Bridge Design Website at the following location:

DOTD Internet > *Inside La DOTD* > *Divisions* > *Engineering* > *Bridge Design* > *Downloads* > *Luminaire Support Design and Detailing*

- Section 1.1 adds the requirement to co-seal the Luminaire Schedule plan sheet.
- Section 1.2 includes added definitions for "high-mast" and "low-mast."
- Section 2.2 revises the definition for "Mounting Height."
- Section 3.8 includes added language requiring plans to show risk category, mean recurrence interval, and basic design wind speed for projects having permanent sign trusses, high mast lighting, and/or low mast lighting.
- Section 3.8 modifies the definition of "High Risk Category."
- Section 3.8.1 changed "design wind pressure" to "maximum design wind pressure" and defines this term as the design wind pressure at luminaire height above ground or mean water surface resulting from the luminaire "mounting height" (see revised definition Section 2.2).
- Section 3.8.1 adds clarification to the determination of design wind speed and exposure category.
- Section 3.8.4 adds clarification to the determination of height and exposure factor.
- Section 3.8.5 sets a value for directionality factor.
- Section 3.8.7 modifies the method for determination of wind drag coefficient.
- Sections 3.8.7 and 3.9.1 adds commentary discussing the approach selected for luminaire foundation design.
- Section 3.9 adds design requirements for low-mast lighting foundations and luminaire support blisters for the cases of when luminaire support (mast/pole) details and configurations are unknown at the time of foundation design.
- Section 14.3 adds the requirement for working drawing review.
- Other minor edits.

This technical memorandum is posted on the LA DOTD Website under *Inside La DOTD* > *Divisions - Engineering* > *Bridge Design* > *Technical Memoranda > BDTMs > Active BDTMs.*

Please contact Kelly Kemp (kelly.kemp@la.gov or 225-379-1809) if you have questions or comments.

ZZF/mb/kmk
Attachment

c: Christopher P. Knotts (Chief Engineer)
Chad Winchester (Deputy Chief Engineer)
Peggy Paine (Critical Projects Division Administrator)
David Smith (Project Development Division Chief)
Vince Latino (Assistant Secretary of Operations)

David Miller (Chief Maintenance Administrator)
Nick Fagerburg (Bridge Maintenance Administrator)
Michael Vosburg (Chief Construction Division Engineer)
Brian Owens (Construction Engineer Administrator)
Chris Nickel (Pavement and Geotechnical Engineer Administrator)
Mark Chenevert (Contract Services Administrator)
Art Aguirre (FHWA)
District Administrators and ADAs of Engineering and Operations
District Bridge Engineers and Area Engineers

Attachment A

BDEM Part II, Volume 3

Clean Copy

SECTION 1 – INTRODUCTION

TABLE OF CONTENTS

1.1—SCOPE

The following shall supplement *A1.1*.

Permanent Sign Design

The safety, efficiency and operation on a highway depends a great deal upon the placement of permanent highway signing as a means of informing, warning and controlling drivers. The signing of highways may include the following sign types: roadside or median breakaway ground mounted signs, large overhead ground mounted signs, large overhead structure mounted signs, bridge fascia mounted signs and other structure mounted signs attached to the side of the bridge.

The DOTD Traffic Engineering Development Section coordinates the plan development of permanent signing plans into the project plans. This includes sign quantities, sign pay items, sign layout sheets that indicate the sign types, and sign locations.

The DOTD Bridge Design Section is responsible for the structural design, crashworthiness and Standard Plans for the breakaway ground mounted signs, overhead signs and structure mounted signs. Permanent signing construction plans can be let as a project by itself or can be placed in projects also containing roadway and bridge construction plans. The Bridge Design Section maintains Standard Plans for both overhead and roadside breakaway sign details, which can be requested from Bridge Design Section website.

A request shall be made to the Bridge Design Section task manager early in the preliminary plan stage to perform any structural design required for the permanent signs and to provide the DOTD Standard Plans or project specific details to be included in the construction plans during the final plan stage. Permanent signs mounted to an existing bridge or new bridge or to another structural component require special designs and details. A special design request should be made early in the design process for these sign types.

The location, messaging, and reflectorization of sign panels are important considerations in signing. DOTD standards and the *Manual on Uniform Traffic Control Devices (MUTCD)* provides guidance and ensures uniformity of traffic

control devices across the nation. The use of uniform messages, location, size, shapes, and colors for signs helps to improve the efficiency of the surface transportation system and also helps reduce the cost through standardization.

Roadside ground mounted signs shall be placed outside the clear zone, behind longitudinal barriers or on bridge structures protected by barriers. If these measures are not feasible, the roadside sign supports must be breakaway and follow the latest DOTD Standard Plans. Typically large overhead sign supports must either be outside the clear zone or protected by longitudinal barriers since the supports are fixed and not breakaway.

Luminaires

Low-mast foundations (ground mounted, barrier mounted, or structure mounted) shall be designed in accordance with the BDEM Part II – Volume 3 accounting for the project specific site conditions. High-mast foundations shall be in accordance with the latest DOTD Standard Plans.

A Luminaire Schedule template has been developed and is shown in Appendix A. This template is available for download on the DOTD Bridge Design website. This schedule shall be used on all lighting projects and included in the electrical plan set. A structural engineer shall calculate and provide the structural design data to be entered into the schedule. The final plan sheet shall be co-sealed, signed, and dated by professional structural and electrical engineers licensed to practice in the State of Louisiana.

1.2—DEFINITIONS

The following shall supplement *A1.2.*

High-Mast Lighting – Also known as high-level lighting.

Low-Mast Lighting – Also known as low-level lighting or typical lighting; lighting provided at heights less than 55 feet, typically using one to two luminaires.

1.4—TYPES OF STRUCTURAL SUPPORTS

1.4.1—Sign

The following shall supplement *A1.4.1*.

Permanent Breakaway Roadside Sign Design and Details

Breakaway signs shall meet the current requirements for NCHRP Report 350 or AASHTO MASH. Roadside ground mounted signs generally consist of single post or multiple post breakaway systems. Most breakaway posts consist of rolled or round tube/pipe steel shapes that use either unidirectional or multidirectional slip base designs. Unidirectional breakaway posts are generally used when a vehicle can impact the sign in only one direction. Multidirectional single breakaway posts are used when a vehicle can impact the sign from any direction such as two way traffic or at intersections.

The DOTD roadside ground mounted breakaway slip base details are designed for both vehicular impact and wind loading. The designs are limited to the maximum sign areas indicated in the DOTD Standard Plans for each specific sign type. If a larger sign area is needed, a special design must be initiated for the roadside ground mounted breakaway sign or consideration should be given for using a large overhead sign.

In certain situations, small roadside signs may be needed to structurally mount to a bridge or another structural highway component. These sign types shall be individually designed based on a fixed (non-breakaway) structural connection using specific sign areas and shall be protected from impact by a roadway or bridge barrier.

Refer to the DOTD Standard Plans “Roadside Traffic Signs” and construction specifications for further information.

Permanent Overhead Roadside Sign Design and Details

Overhead signs consist of the following types: ground mounted trusses, structure mounted trusses, ground mounted cantilever trusses, structure mounted cantilever trusses and structure fascia mounted signs. For ground mounted trusses, driven pile or drilled shaft foundations are typically used.

For structure mounted signs, structural connections for each sign location must be individually designed and specific details developed to meet the individual site characteristics. In some cases, the truss and post details for structural mounted signs may have to be individually designed depending on the specific site characteristics such as sign height or sign area. The structure (bridge, retaining wall, etc.) that the sign is attached to must also be analyzed for the additional loading (wind, dead, etc.) on an individual basis. This could affect the bridge superstructure design for the deck or girder, substructure or other structural component.

Member sizes are shown in the details based on the specific sign area, span distance and other limitations noted in the details. For each project a design data table shown in the Standard Plans shall be filled out by the designer along with determining the pay item and quantities for all signs. If the design requirements noted in the Standard Plans are not met, individual designs shall be done to meet the specific site requirements.

During the construction phase, structural shop drawings shall be submitted to the engineer of record from the general contractor prior to fabrication of the overhead and fascia signs for review.

Refer to the DOTD Standard Plans “Overhead Traffic Signs” and construction specifications for further information.

1.4.2—Luminaires

The following shall supplement *A1.4.2.*

The DOTD Bridge Design Section maintains structural details for High Mast Lighting, which can be requested from the DOTD Bridge Design website. For electrical design information concerning typical high mast or low mast roadway lighting details and specifications, contact the DOTD Bridge Design Electrical group.

APPENDIX A—LUMINAIRE SCHEDULE

LUMINAIRE SUPPORT					LOCATION					FOUNDATION			LUMINAIRE				STRUCTURAL DESIGN DATA							
POLE ID NO.	SPC. NO.	CKT. NO.	POLE NO.	ITEM NO.	ROUTE/ ALIGNMENT	STATION	OFFSET (FT - LT/RT)	LATITUDE (DD:MM:SS.SS)	LONGTITUDE (DD:MM:SS.SS)	MT. TYPE	TOP ELEV. (FT)	LENGTH (FT)	MT. HEIGHT (FT)	ITEM NO.	QUANTITY	AMP @ 480V	RISK CATEGORY	MRI	BASIC WIND SPEED (MPH)	EXPOSURE CATEGORY	Z (FT)	DRAG COEFF.	MAX WIND PRESS. (PSF)

DEFINITIONS:

POLE ID NO. - SECONDARY POWER CONTROLLER NUMBER; CIRCUIT NUMBER; POLE NUMBER
SPC. NO. - SECONDARY POWER CONTROLLER NUMBER
CKT. NO. - CIRCUIT NUMBER
POLE NO. - POLE NUMBER
ITEM NO. - ELECTRICAL EQUIPMENT ITEM NUMBER
OFFSET - LT=LEFT, RT=RIGHT
MT. TYPE - MOUNTING TYPE - B=BARRIER, G=GROUND, S=STRUCTURAL
TOP ELEV. - TOP OF FOUNDATION ELEVATION
LENGTH - DRILLED SHAFT LENGTH (IF APPLICABLE)
MT. HEIGHT- LUMINAIRE MOUNTING HEIGHT ABOVE THE ROADWAY/BRIDGE SURFACE
MRI - MEAN RECURRENCE INTERVAL
Z - VERTICAL DISTANCE MEASURED FROM THE TOP OF THE POLE TO THE NATURAL GROUND/MEAN WATER SURFACE
MAX WIND PRESSURE - CALCULATED WIND PRESSURE AT THE TOP OF THE POLE

SECTION 2 – GENERAL FEATURES OF DESIGN

TABLE OF CONTENTS

2.2—DEFINITIONS

The following shall replace the definition for Mounting Height in *A2.2.*

Mounting Height – Minimum vertical distance to the bottom of a sign, luminaire, or traffic signal relative to the roadway/bridge surface.

SECTION 3 – LOADS

TABLE OF CONTENTS

3.8—WIND LOAD

The following shall supplement *A3.8*.

Plans with permanent sign trusses, high mast, or low mast lighting shall indicate the risk category, mean recurrence interval (MRI), and the basic wind speed selected for the design.

The following shall replace the High Risk Category defined in *Table A3.8-1*.

High: Support failure could obstruct an evacuation route, one-way-in/one-way-out route, or any designated National Highway System (NHS) route segment.

3.8.1—Wind Pressure Equation

The following shall supplement *A3.8.1*.

Plans shall identify each structure location, mount elevation, component height, exposure category, drag coefficient, and maximum design wind pressure. The maximum design wind pressure listed in the Luminaire Schedule shall be the design wind pressure calculated at the top of the pole taking into account its location above the natural ground/mean water surface.

3.8.4—Height and Exposure Factor K_z

The following shall supplement *A3.8.4*.

Refer to the *Minimum Design Loads for Buildings and Other Structures, Standard ASCE/SEI 7* to determine the appropriate exposure category, α, and z_g factors.

3.8.5—Directionality Factor K_d

The following shall replace *A3.8.5*.

The directionality factor (K_d) shall be 1.0.

3.8.7—Drag Coefficients C_d

The following shall replace the first paragraph in *A3.8.7*.

For high-mast or low-mast foundation/blister design, the wind drag coefficient (C_d) shall be taken as 1.2.

A conservative approach for the design of luminaire support foundation elements has been adopted to account for potential variations and load effects related to pole geometry.

For unknown structure types, C_d shall be taken as 1.2 and documented in the plans. Should the contractor elect to refine the design and alter the plan design criteria, a proposal in accordance with the LSSRB 105.19.3 or 105.19.4 will be required, followed by a change order, and issuance of change ordered sheet(s).

For known structure types, C_d shall be determined from Table 3.8.7-1 and documented in the plans. C_v shall be taken as:

$C_v = 0.8$ for the Extreme Limit State

$C_v = 1.0$ otherwise

3.9—DESIGN WIND LOADS ON STRUCTURES

3.9.1—Load Application

The following shall supplement *A3.9.1*.

For the design of low-mast foundations and luminaire support blisters for unknown luminaire support (mast/pole) configurations, the following design assumptions shall be used:

A conservative approach for the design of luminaire support foundation elements has been adopted to account for variations related to pole, arm, and luminaire selection.

Table 3.9.1-1 Foundation Design Parameters

Component	Design Parameter	Design Value
Mast/Pole	Length	50 ft
	Diameter	10 in
	Weight	550 lbs
Luminaire Arm	Length	15 ft
	Diameter	8 in
	Weight	115 lbs
Luminare	EPA	1.30 sq ft
	Weight	35 lbs

SECTION 14 – FABRICATION, MATERIALS, AND DETAILING

TABLE OF CONTENTS

14.3—WORKING DRAWINGS

14.3.1—Shop Drawings

The following shall supplement *A14.3.1*.

The following note shall be included in the plans:

Shop drawings of structural supports for highway signs and luminaires shall be reviewed and accepted by the structural engineer of record.

Attachment B

BDEM Part II, Volume 3

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~~CHAPTER~~ SECTION 1 – INTRODUCTION

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~~Luminaire SupportS luminaire support luminaire support (mast/)Mast/Luminaire~~

APPENDIX A—LUMINAIRE SCHEDULE

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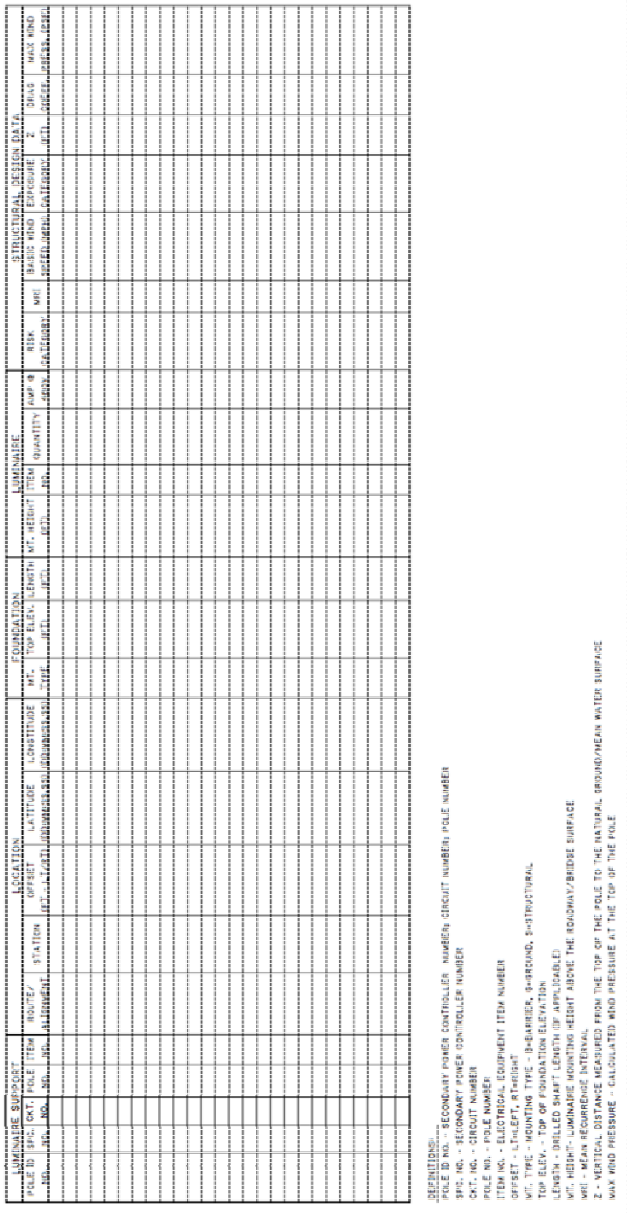

SECTION 2 – GENERAL FEATURES OF DESIGN

TABLE OF CONTENTS

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3.8.4—Height and Exposure Factor K_z

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SECTION 14 – FABRICATION, MATERIALS, AND DETAILING

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Attachment C

Sample Luminaire Schedule and Usage Instructions

LUMINAIRE SUPPORT					LOCATION					FOUNDATION			LUMINAIRE				STRUCTURAL DESIGN DATA						
POLE ID NO.	SPC. NO.	CKT. NO.	POLE NO.	ITEM NO.	ROUTE/ ALIGNMENT	STATION	OFFSET (FT - LT/RT)	LATITUDE (DD:MM:SS.SS)	LONGTITUDE (DD:MM:SS.SS)	MT. TYPE	TOP ELEV. (FT)	LENGTH (FT)	MT. HEIGHT (FT)	ITEM NO.	QUANTITY	AMP @ 480V	RISK CATEGORY	MRI	BASIC WIND SPEED (MPH)	EXPOSURE CATEGORY	Z (FT)	DRAG COEFF.	MAX WIND PRESS. (PSF)
4.1.1	4	1	1	342	I-210 CL	66+37.49	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.2	4	1	2	342	I-210 CL	68+21.29	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.3	4	1	3	342	I-210 CL	70+04.08	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.4	4	1	4	342	I-210 CL	72+21.96	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.5	4	1	5	342	I-210 CL	74+34.44	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.6	4	1	6	342	I-210 CL	76+39.97	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.7	4	1	7	342	I-210 CL	78+42.66	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.8	4	1	8	342	I-210 CL	80+49.00	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.9	4	1	9	342	I-210 CL	82+59.25	N/A	N/A	N/A	G	15.00	9.50	40	310	2	1.22	HIGH	1,700	150	D	40.00	1.2	101
4.1.10	4	1	10	315	I-210 CL	85+00.00	61.91 - RT	N/A	N/A	G	15.00	9.50	40	310	1	0.61	HIGH	1,700	150	D	40.00	1.2	101
4.1.11	4	1	11	315	I-210 CL	87+60.88	55.5 - RT	N/A	N/A	G	15.00	9.50	40	310	1	0.61	HIGH	1,700	150	D	40.00	1.2	101
4.1.12	4	1	12	315	I-210 CL	90+51.14	48.75 - RT	N/A	N/A	G	15.00	9.50	40	310	1	0.61	HIGH	1,700	150	D	40.00	1.2	101
4.1.13	4	1	13	315	I-210 CL	85+08.23	63.5 - LT	N/A	N/A	G	15.00	9.50	40	310	1	0.61	HIGH	1,700	150	D	40.00	1.2	101
4.1.14	4	1	14	315	I-210 CL	87+62.21	55.5 - LT	N/A	N/A	G	15.00	9.50	40	310	1	0.61	HIGH	1,700	150	D	40.00	1.2	101
4.1.15	4	1	15	315	I-210 CL	90+50.77	48.75 - LT	N/A	N/A	G	15.00	9.50	40	310	1	0.61	HIGH	1,700	150	D	40.00	1.2	101
4.2.16	4	2	16	322	I-210 CL	93+24.71	N/A	N/A	N/A	S	18.33	N/A	50	311	2	1.22	HIGH	1,700	150	D	68.22	1.2	105
4.2.15	4	2	15	322	I-210 CL	96+00.46	N/A	N/A	N/A	S	18.33	N/A	50	311	2	1.22	HIGH	1,700	150	D	68.22	1.2	105
4.2.14	4	2	14	322	I-210 CL	98+72.67	N/A	N/A	N/A	S	18.33	N/A	50	311	2	1.22	HIGH	1,700	150	D	68.22	1.2	105
4.2.13	4	2	13	322	I-210 CL	101+47.68	N/A	N/A	N/A	S	18.33	N/A	50	311	2	1.22	HIGH	1,700	150	D	68.22	1.2	105
4.2.12	4	2	12	322	I-210 CL	104+20.19	N/A	N/A	N/A	S	18.33	N/A	50	311	2	1.22	HIGH	1,700	150	D	68.22	1.2	105
4.2.11	4	2	11	322	I-210 CL	106+91.70	N/A	N/A	N/A	S	18.33	N/A	50	311	2	1.22	HIGH	1,700	150	D	68.22	1.2	105
4.2.10	4	2	10	322	I-210 CL	109+69.11	N/A	N/A	N/A	S	18.56	N/A	50	311	2	1.22	HIGH	1,700	150	D	68.45	1.2	105
4.2.9	4	2	9	322	I-210 CL	112+40.40	N/A	N/A	N/A	S	33.38	N/A	50	311	2	1.22	HIGH	1,700	150	D	83.27	1.2	109
4.2.8	4	2	8	322	I-210 CL	115+19.10	N/A	N/A	N/A	S	47.29	N/A	50	311	2	1.22	HIGH	1,700	150	D	97.18	1.2	112
4.2.7	4	2	7	322	I-210 CL	118+02.26	N/A	N/A	N/A	S	61.45	N/A	50	311	2	1.22	HIGH	1,700	150	D	111.34	1.2	114
4.2.6	4	2	6	322	I-210 CL	120+78.44	N/A	N/A	N/A	S	72.26	N/A	50	311	2	1.22	HIGH	1,700	150	D	122.15	1.2	116

DEFINITIONS:

POLE ID NO. - SECONDARY POWER CONTROLLER NUMBER; CIRCUIT NUMBER; POLE NUMBER
SPC. NO. - SECONDARY POWER CONTROLLER NUMBER
CKT. NO. - CIRCUIT NUMBER
POLE NO. - POLE NUMBER
ITEM NO. - ELECTRICAL EQUIPMENT ITEM NUMBER
OFFSET - LT=LEFT, RT=RIGHT
MT. TYPE - MOUNTING TYPE - B=BARRIER, G=GROUND, S=STRUCTURAL
TOP ELEV. - TOP OF FOUNDATION ELEVATION
LENGTH - DRILLED SHAFT LENGTH (IF APPLICABLE)
MT. HEIGHT- LUMINAIRE MOUNTING HEIGHT ABOVE THE ROADWAY/BRIDGE SURFACE
MRI - MEAN RECURRENCE INTERVAL
Z - VERTICAL DISTANCE MEASURED FROM THE TOP OF THE POLE TO THE NATURAL GROUND/MEAN WATER SURFACE
MAX WIND PRESSURE - CALCULATED WIND PRESSURE AT THE TOP OF THE POLE

Sample Completed Luminaire Schedule

Usage Instructions for Luminaire Schedule:

General Instructions

- This schedule shall be used for all luminaire installations (high-mast and low-mast).
- "Design-Regular.ttf" Font must be installed on your computer in order for the font to render properly. Text shall be ALL CAPS.
- Do not modify the text size or formatting.
- Copy Excel Template into the project folder under H.######>Bridge-Facilities>Electrical>Plans>Spreadsheets.
- Enter data into Excel table. Add/delete lines within the table as needed.
- Select and copy table.
- In Microstation, create a new sheet, reference sheet border (Scale 1:1), select Edit>Paste. Paste as: Picture, Method: By Size, Scale: 17.

Luminaire Support Information

1. Pole Identification Number (POLE ID NO.)
    a. Unique identifier consisting of the secondary power controller number, circuit number, and pole number separated by decimals.
    b. Format = ##.##.##
2. Secondary Power Controller (SPC. NO.)
    a. Enter secondary power controller number powering the circuit.
    b. Format = ##
3. Circuit Number (CKT. NO.)
    a. Enter circuit number powering the luminaire.
    b. Format = ##
4. Pole Number (POLE NO.)
    a. Poles shall be sequentially numbered for each circuit beginning with 1 at the furthest pole from the power source.
    b. Format = ##
5. Item Number (ITEM NO.)
    a. Enter light pole electrical equipment item number
    b. Format = ###

Location Information

6. Route/Alignment
    a. Enter route using the following naming convention
        i. Route
            1. Interstate Routes = I-### (Ex: I-10, I-110, etc.)
            2. United States Highways = US ### (Ex: US 90, US 190, etc.)
            3. Louisiana Highways = LA #### (Ex: LA 73, LA 3246, etc.)
            4. Ramps = RAMP ## or RAMP LETTER (Ex: RAMP 1 or RAMP A)
        ii. Direction (if applicable)
            1. EB – Eastbound
            2. WB – Westbound

iii. Alignment
1. CL – Centerline
2. BL – Baseline

b. Format = “Route” “Direction” “Alignment” (Ex: I-10 WB BL, US 90 CL, RAMP A CL, etc.)

7. Station
   a. Enter station number along route/alignment.
   b. Format = ###+##.##
8. Offset
   a. Enter offset from alignment in feet. If pole is located on the route/alignment, enter N/A.
   b. Enter offset direction from alignment.
      i. LT – Left
      ii. RT – Right
   c. Format = ## - “Offset Direction” or N/A (Ex: 20 – RT, etc.)
9. Latitude
   a. Required for projects submitted to the Federal Aviation Administration (FAA). Otherwise, enter N/A.
   b. Enter into degrees : minutes : seconds format.
   c. All values will be in northern hemisphere. Designate with N.
   d. Format = ##:##:##.## N or N/A
10. Longitude
    a. Required for projects submitted to the Federal Aviation Administration (FAA). Otherwise, enter N/A.
    b. Enter into degrees : minutes : seconds format.
    c. All values will be in western hemisphere. Designate with W.
    d. Format = ##:##:##.## W or N/A

<u>Foundation Information</u>

11. Mount Type (MT. TYPE)
    a. Enter mount type
       i. B – Barrier Mounted
       ii. G – Ground Mounted
       iii. S – Structural Mounted
    b. Format = Single Letter
12. Top Elevation (TOP ELEV.)
    a. Top of foundation elevation in feet
    b. Format = ##.##
13. Length
    a. Enter drilled shaft length in feet
    b. Enter N/A for barrier or structure mounted applications
    c. Format = ##.##

Luminaire Information

14. Mount Height (MT. HEIGHT)
    a. Enter luminaire mounting height above roadway in feet
    b. Format = ###
15. Item Number (ITEM NO.)
    a. Enter luminaire electrical equipment item number
    b. Format = ###
16. Quantity
    a. Enter luminaire quantity
    b. Format = ##
17. Amperes at 480 Volts (AMP @ 480V)
    a. Enter amperes at 480 volts
    b. Format = #.##

Structural Design Data

18. Risk Category
    a. Enter risk category
        i. TYPICAL
        ii. HIGH
        iii. LOW
    b. Format = Text
19. Mean Recurrence Interval (MRI)
    a. Enter mean recurrence interval
        i. 1,700
        ii. 700
        iii. 300
    b. Format = #,###
20. Basic Wind Speed
    a. Enter basic wind speed in miles per hour
    b. Format = ###
21. Exposure Category
    a. Enter exposure category
        i. B
        ii. C
        iii. D
    b. Format = Single Letter
22. Z
    a. Vertical distance measured from the top of the pole to the natural ground/mean water surface in feet.
    b. Format = ###.##
23. Drag Coefficient (DRAG COEFF.)
    a. Enter assumed drag coefficient
    b. Format = #.#
24. Maximum Wind Pressure (MAX WIND PRESS.)

a. Enter the calculated wind pressure at the top of the pole in pounds per square foot
b. Format = ###