



CONSTRUCTION LEADERS

LETTER OF TRANSMITTAL	
DATE: March 26, 2015	PCL JOB NO: 5515002
ATTN: Chris Barker	TRANSMITTAL NO: 047

To: **State of Vermont Agency of Transportation**
One National Life Drive

(802) 828-0053

Re: Hartford Lateral Slide
Project No.: IM 091-2(79)
Contract ID.: 12A132

County: Windsor

PCL FILE NO: 5515002-29.1

WE ARE SENDING Attached Under separate cover via Email & SP the following:

Shop drawings Prints Plans Samples Specifications

Copy of Letter Change Order Other

COPIES	SPEC.	REVISION	DESCRIPTION
1	Spec. Prov. #12	1	Lighting Plan

TRANSMITTED for as checked below:

For approval Approved as submitted Resubmit 1 Copies for approval

For your use Approved as noted Submit Copies for distribution

As requested Returned for corrections Return Corrected prints

For review and comment

Remarks:

The attached lighting plan has been revised per comments from the Agency dated 3/23/2015.

Please return an email of this approved submittal to Erich Heymann (ewheymann@pcl.com) and Jeremy Mackling (jmackling@pcl.com).

We request the review and return of this submittal within 14 days. Please advise if this request cannot be met so we can plan accordingly.

By: **Erich Heymann**, Project Engineer

COPY TO: Project Files



CONSTRUCTION LEADERS

**SUBMITTAL NO. : 29.1
Lighting Plan**

Item No.	Specification	Description
1	Spec. Prov. #12	Lighting Plan
.		

PROJECT:
HARTFORD LATERAL SLIDE
PROJECT NO.: IM 091-2(79)
CONTRACT ID.: 12A132

OWNER:
STATE OF VERMONT AGENCY OF TRANSPORTATION

ENGINEER OF RECORD:
STATE OF VERMONT AGENCY OF TRANSPORTATION

CONTRACTOR:
PCL CIVIL CONSTRUCTORS, INC.

MARCH 26, 2015

SITE SPECIFIC LIGHTING PLAN

**PCL Civil Constructors, Inc.
Transportation Infrastructure Group - Tampa**

PCL Job # 5515002

**Hartford Lateral Slide Project
I-91 over US-5
Project No.: IM 091-2(79)**

Hartford, VT

Site Specific Light Plan

A. Introduction

As stated in the Special Provisions for Hartford IM 091-2 (79), and in accordance with the National Cooperative Highway Research Program (NCHRP) Report 476 – “Guidelines for Design and Operation of Nighttime Traffic Control for Highway Maintenance and Construction”, this document serves to present a lighting plan to be implemented during nighttime work. The nighttime work associated with this project consists of beam erection, concrete deck pour, concrete barrier wall, and bridge closure periods. Girder erection is scheduled for June 8th. The concrete deck pour and barrier wall are scheduled between July 24th and August 7th. The closure periods are scheduled for August 21st – 24th and August 28th – 31st of 2015. The lighting plan PCL had provided has been categorized into four different phases. The phases are broken down in further detail in the following section

B. Phases and Location

The lighting plan has been divided into four specific phases. Each phase describes the scope of work and the desired location of each light plant. Light plants are to be installed according to the lighting plan attached at the end of this document. Light plants are to be placed where illumination is maximized and glare is minimized. Glare control is discussed in greater detail in Section E. Additional lighting will be provided from the Bidwell during the concrete deck pour. Lighting balloons, shown in the figure below, will be attached to the Bidwell throughout the deck pour.



NCHRP Report 476: Figure 29

Sufficient lighting, provided by a light plant or equivalent source, is required for each phase when nighttime work is required. Each phase is described in further detail below:

Phase I:

- Phase I consists of staging and erecting six girders approximately 133 feet in length on the east side of I-91N. The beams will be set onto the steel false work for the slide system adjacent to I-91N. Two light plants are to be placed on the east side of I-91N for Phase I. One light plant is to be set on the south side of US 5 and one light plant is to be set on the north side of US 5 to provide sufficient lighting in the work zone. Phase I will be repeated for the deck pour for the I-91N Bridge on July 24th. Once the bridge deck has reached the three day cure time, per specifications, concrete barrier wall will be installed. Dismantling and transporting the light plants will be required.

Phase II:

- Phase II consists of staging and erecting six girders approximately 133 feet in length on the west side of I-91 S. The beams will be set onto the steel false work for the slide system adjacent to I-91 S. Light Plants must be dismantled, then transported to the appropriate area per the Phase II Lighting Plans. Two light plants are to be placed on the west side of I-91S for Phase II. One light plant is to be set on the south side of US 5 and one light plant is to be set on the north side of US 5 to provide sufficient lighting in the work zone. Phase II will be repeated for the deck pour for the I-91N Bridge on July 31st. Once the bridge deck has reached the three day cure time, per specifications, concrete barrier wall will be installed. Dismantling and transporting the light plants will be required.

Phase III:

- Phase III will consist of the closure period August 21st-24th for I-91N. Work will consist of demolition of the existing bridge and sliding the new bridge, via lateral slide system, into place per spec. There will be four light plants for this phase. Two light plants will be placed on the south side of US 5, and two light plants will be placed on the north side of US 5. View attached plans for details.

Phase IV:

- Phase IV will consist of the closure period August 28th -31st for I-91S. Work will consist of demolition of the existing bridge and sliding the new bridge, via lateral slide system, into place per spec. There will be four light plants for this phase. Two light plants will be placed on the south side of US 5, and two light plants will be placed on the north side of US 5. View attached Plans for details.

C. Traffic Control

Nighttime work contains traffic control for setting beams. Lane closures will be set up in accordance with the work performed for each particular phase and as per the approved traffic control drawings for Route 5. Lane closures will be required during setting beams, concrete barrier wall, and during the slide. When necessary, traffic will be stopped in both directions for a maximum of 10 minutes in length between the hours of 6:00 pm – 9:00 pm, and 20 minutes in length between the hours of 9:00 pm - 6:00 am. Live traffic on US 5 is not permitted when the crane is picking and placing any item on the bridge or when the slide is in motion. Flaggers will have additional lighting provided to illuminate their position for personal safety. Flaggers will be standing in the approximate location shown in the attached lighting plans at the end of this document.

D. Configuration

The lights will be positioned and angled so that recommended minimum illuminance levels are reached. See table below from NCHRP Report 476 for reference.

TECH NOTE TABLE 3 Recommended minimum illuminance levels and categories for nighttime highway maintenance and construction

Level of Illuminance	Illuminance in Footcandles (lux)	Area of Illumination	Type of Activity	Example of Areas and Activities to be Illuminated
I	5(54)	general illumination throughout spaces	performance of visual task of large sizes; or medium contrast; or low desired accuracy; or for general safety requirements	a) Excavation b) Sweeping and cleanup c) Movement area in the workzone d) Movement between two
II	10 (108)	general illumination of tasks and around equipment	performance of visual task of medium sizes; or low to medium contrast; or medium desired accuracy; or for safety on and around equipment	a) Paving b) Milling c) Concrete work d) Around paver, miller and other construction equipment
III	20 (216)	illumination of task	performance of visual task of small sizes; or low contrast; or desired high accuracy and fine finish	a) Crack filling b) Pothole filling c) Signalization or similar work requiring extreme caution and attention

E. Glare Control

To minimize glare, PCL will adhere to the following NCHRP Report 476 guidelines:

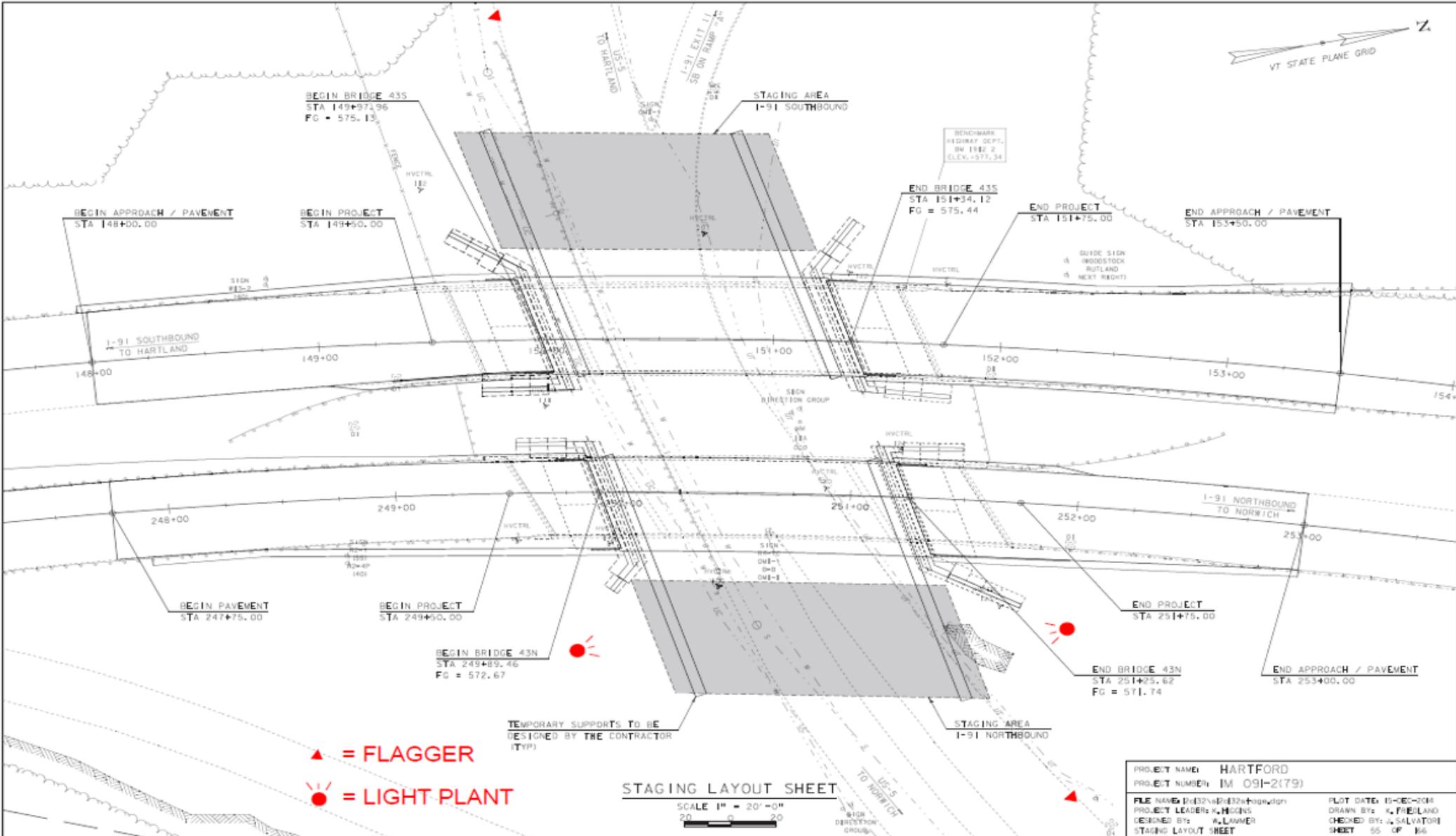
- Tower-mounted luminaires should generally be aimed either parallel or perpendicular to the roadway.
- All luminaires should be aimed such that the center of the beam axis is no greater than 60 degrees above the vertical (straight down).
- None of the luminaires should provide a luminous intensity greater than 20,000 candela at an angle of 72 degrees above the vertical (straight down).

F. Light Plant Specifications

All light plants will follow the NCHRP Report 476 specifications. The light plants will have equivalent characteristics as follows:

- 4,000 Watts of Light (1,000 Watts/EA)
- Individual Floodlight Circuits
- 360° Mast and Light Fixture Rotation with Locking System
- 120 V and 240 V Outlets for Additional Power Supply
- Start trip breaker assures no load condition exists before starting
- Full tubular steel frame trailer for lifetime durability
- 4-point outrigger stance to withstand up to 65 mph winds

LIGHTING PLAN FOR NIGHT WORK (PHASE I)

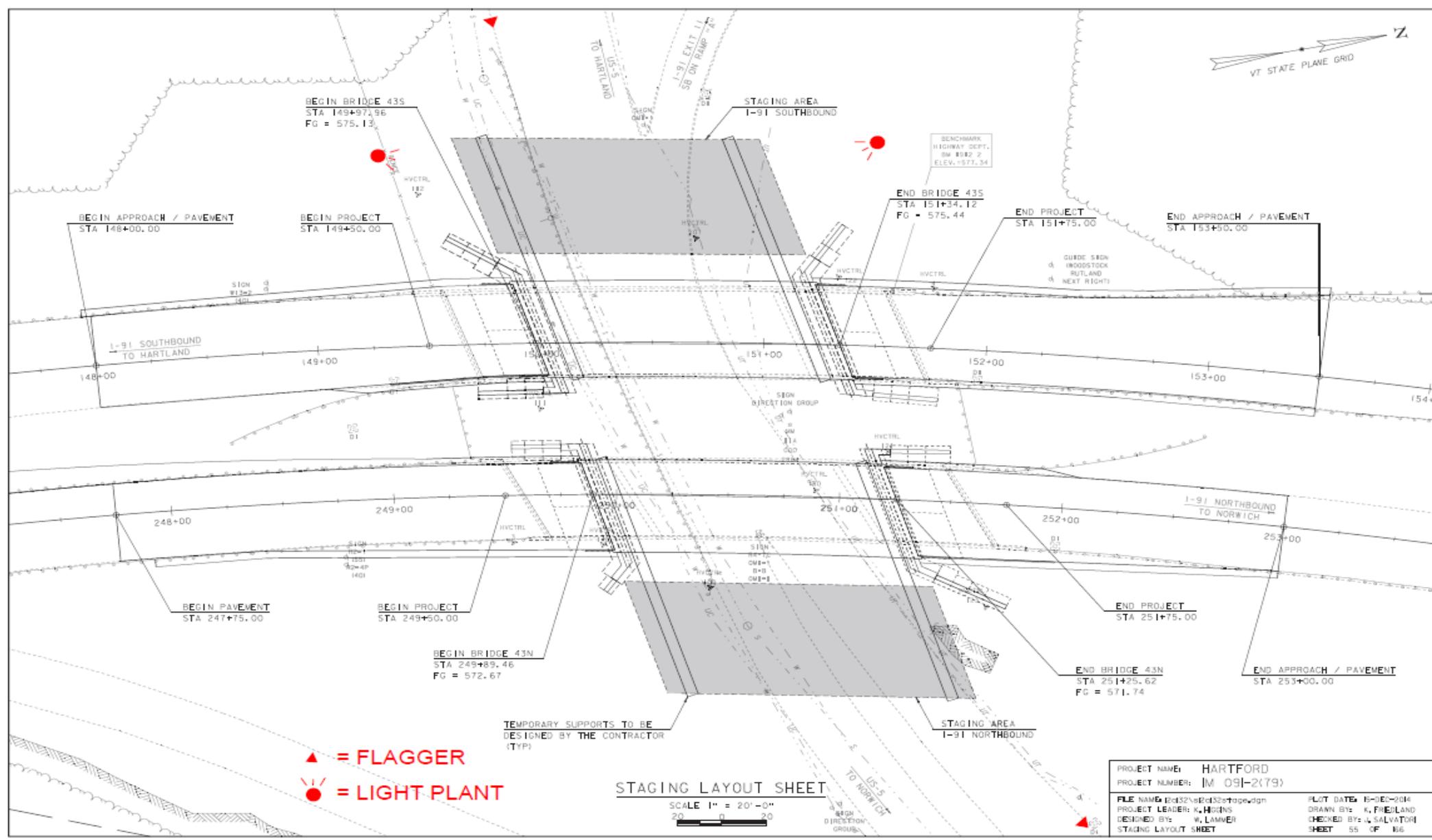


STAGING LAYOUT SHEET

SCALE 1" = 20' = 0"
 20 0 20

PROJECT NAME: HARTFORD	PLOT DATE: 10-06-2008
PROJECT NUMBER: IM 091-2(179)	DRAWN BY: K. FRIELAND
FILE NAME: I20432\ap0432\h306\dwg	CHECKED BY: J. SALVATORE
PROJECT LEADER: K. HARRIS	SHEET 55 OF 66
DESIGNED BY: K. LAWREN	
STAGING LAYOUT SHEET	

LIGHTING PLAN FOR NIGHT WORK (PHASE II)

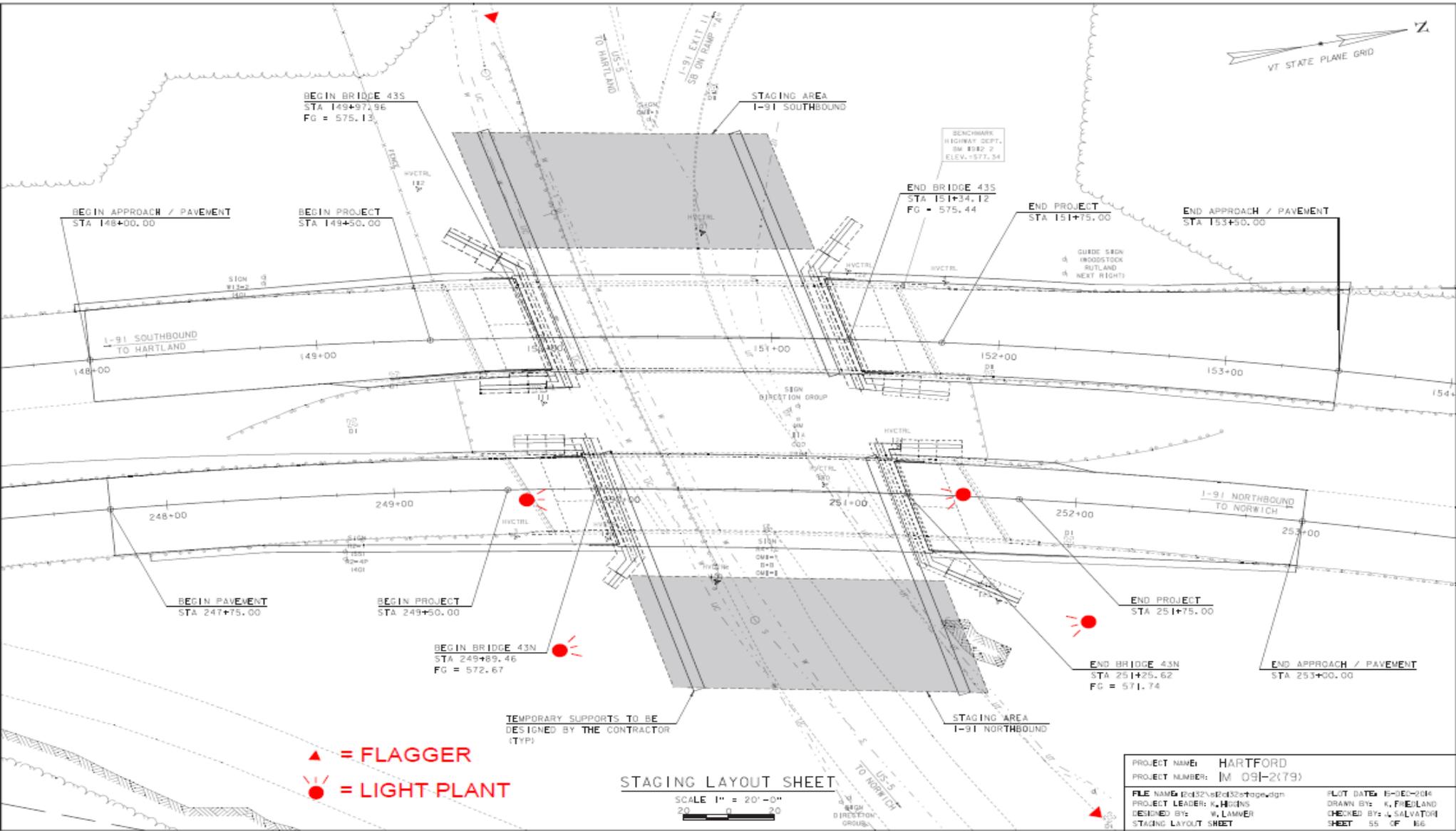


▲ = FLAGGER
 ☀ = LIGHT PLANT

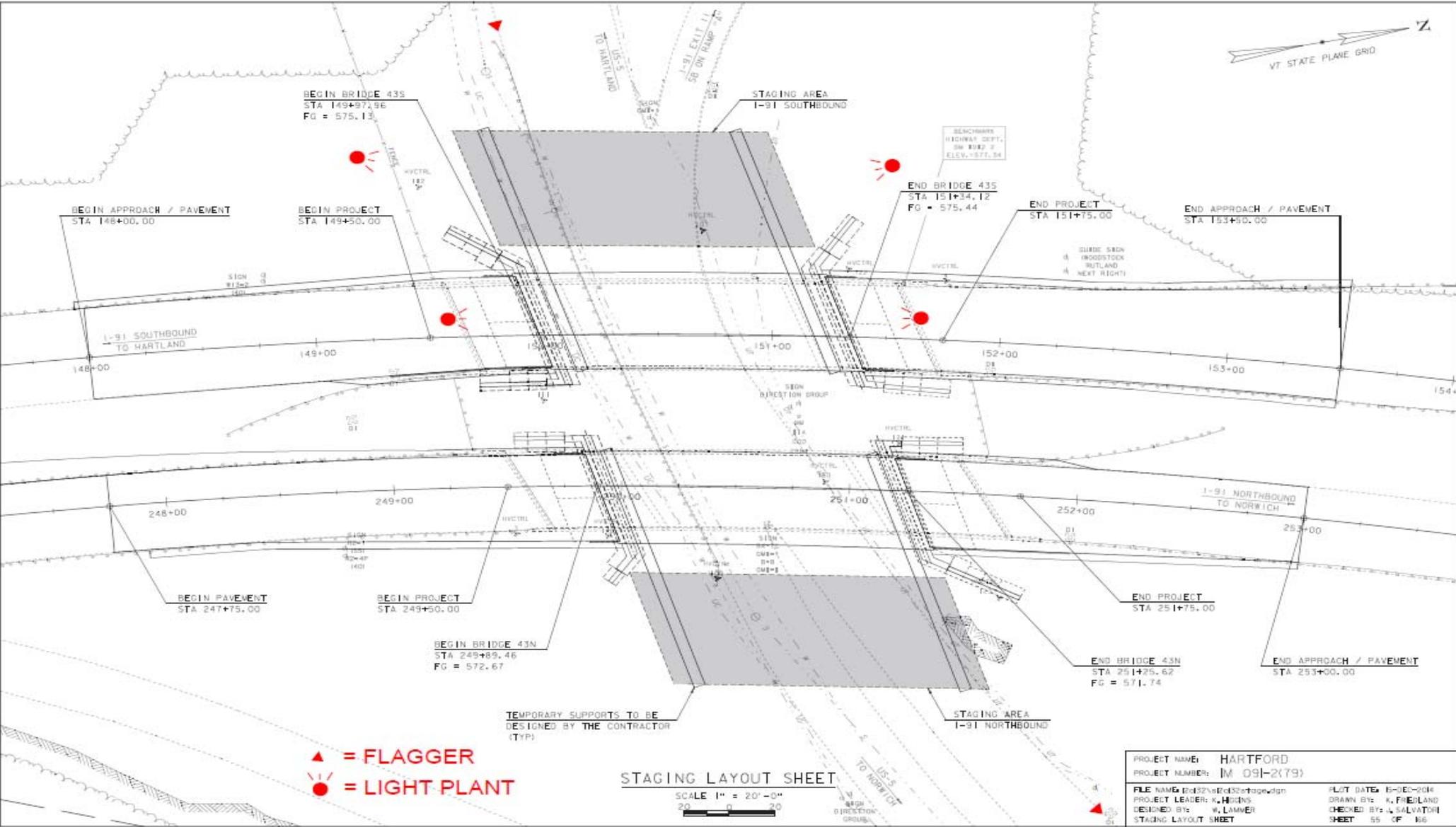
STAGING LAYOUT SHEET
 SCALE 1" = 20'-0"
 20 0 20

PROJECT NAME:	HARTFORD	FILE NAME:	I2032\sr032stage\dwg	PLOT DATE:	15-DEC-2004
PROJECT NUMBER:	IM 09-2(79)	PROJECT LEADER:	K. HIGGINS	DRAWN BY:	K. FRIEDLAND
		DESIGNED BY:	W. LAMVER	CHECKED BY:	A. SALVATORE
		STAGING LAYOUT SHEET			SHEET 55 OF 66

LIGHTING PLAN FOR NIGHT WORK (PHASE III)



LIGHTING PLAN FOR NIGHT WORK (PHASE IV)



▲ = FLAGGER
● = LIGHT PLANT

STAGING LAYOUT SHEET

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	HARTFORD	PLAT DATE:	8-DEC-2004
PROJECT NUMBER:	IM 09I-2(79)	DRAWN BY:	K. FINELAND
FILE NAME:	041219e0432100p04n	DESIGNED BY:	W. LAMMER
PROJECT LEADER:	K. HINDS	CHECKED BY:	L. SALVATORI
STAGING LAYOUT SHEET			SHEET 55 OF 86