

Highway 125 Night Work

Making Work Zones Work Better Workshop

Gerard Kennedy, P.Eng.

Nova Scotia Department of Transportation & Public Works



Night Work = Safety Concerns



Hwy 125 Night Work

- ❖ Project Background
- ❖ Specification Development
- ❖ Traffic Management

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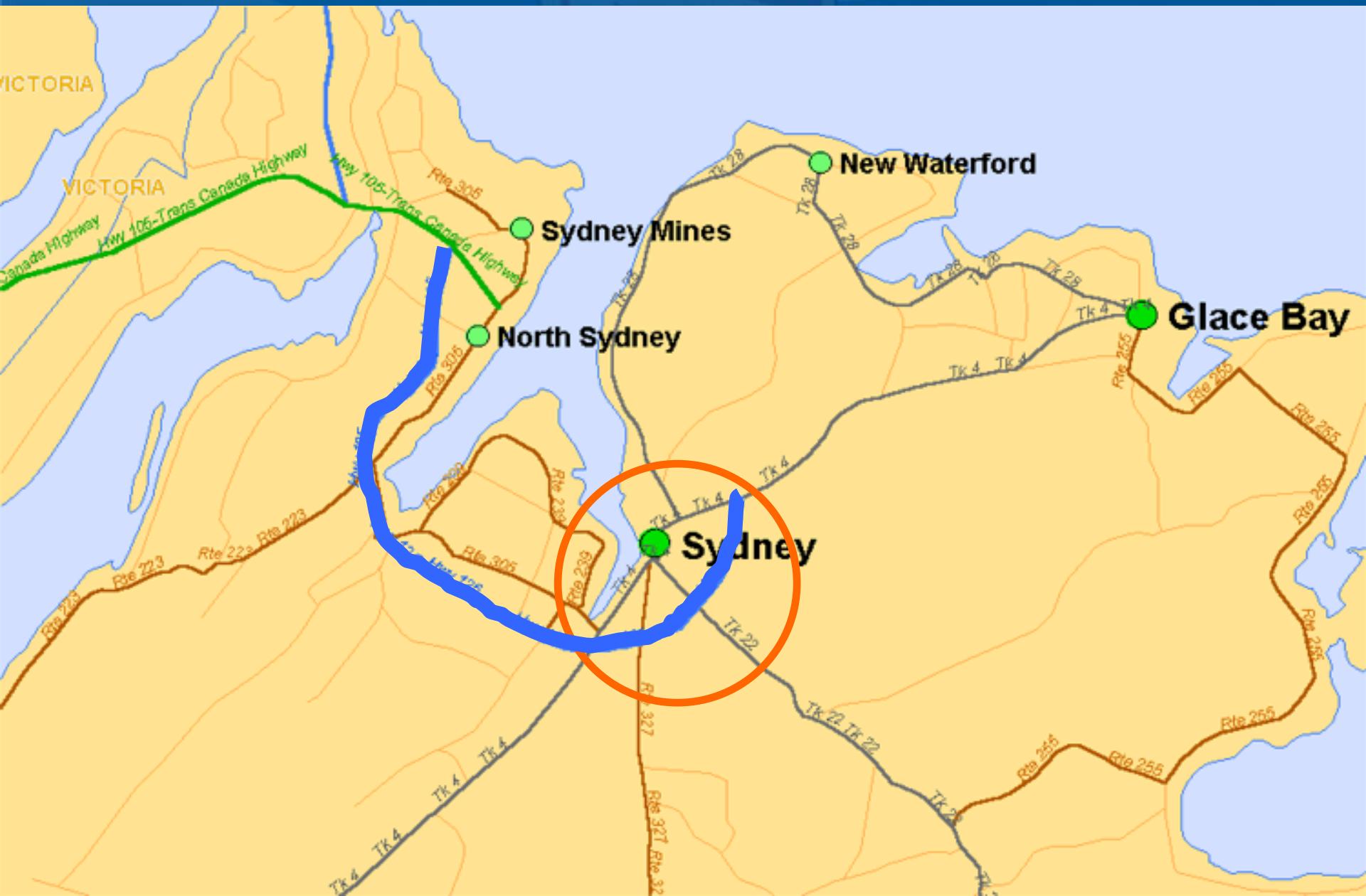


Province of Nova Scotia

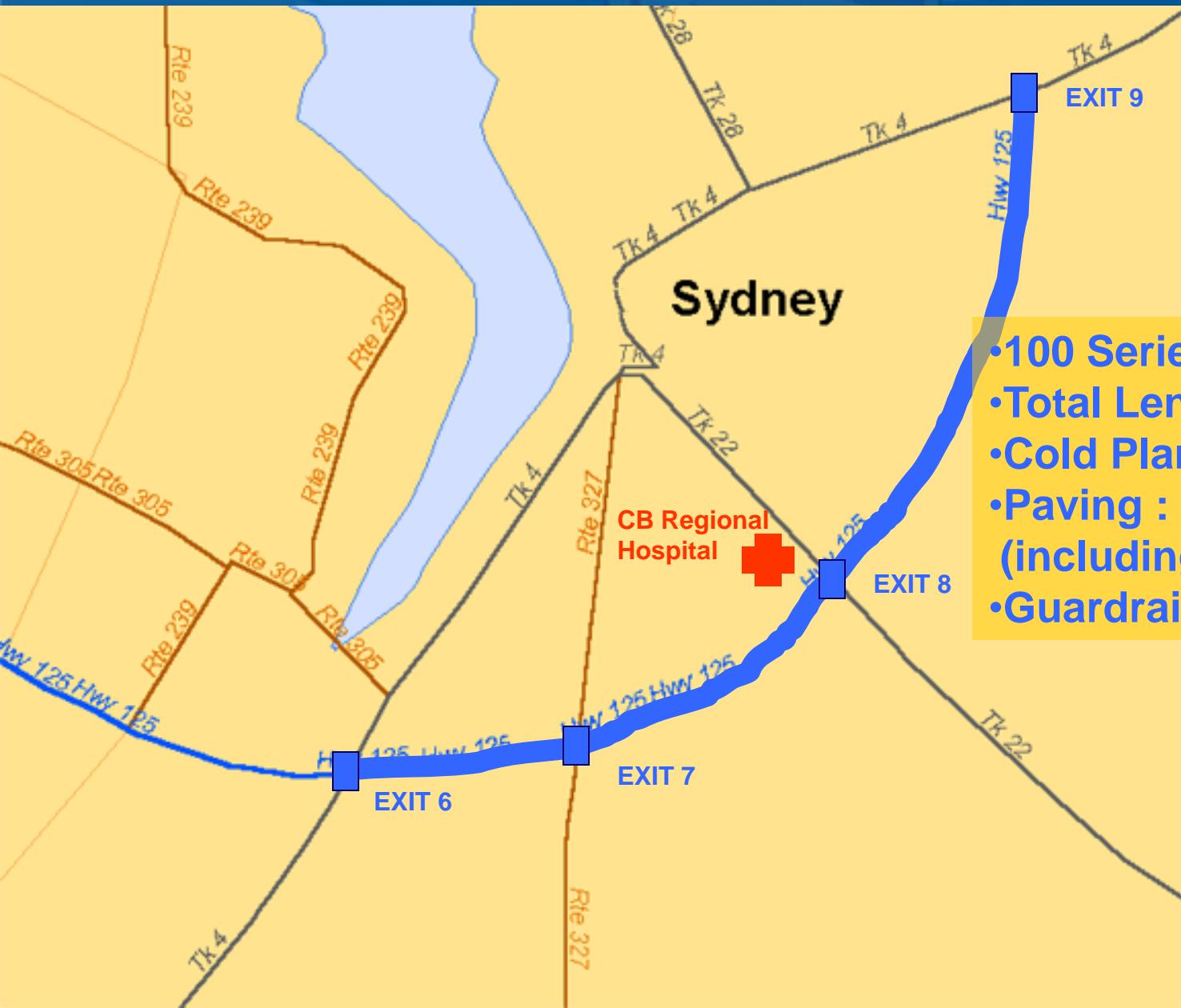


TIA

Highway 125



Highway 125



- 100 Series : 2 lane/ 2 way
- Total Length : 11.2 Km
- Cold Planing : 110,000 m²
- Paving : 33,000 t
(including PMA)
- Guardrail : 3500 m

Hwy 125 - Traffic Volumes

- ❖ AADT = 21,000 veh/day
- ❖ ADT (Summer) = 25,000 veh/day
- ❖ Daytime Hourly = 1000 to 2200 veh/hr
- ❖ Peak Flow > 2300 veh/hr

Hwy 125 Night Work

- ❖ Project Background
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- ❖ Traffic Management



Information Gathering



TIA



Title: REQUIREMENTS FOR MAINTENANCE AND PROTECTION OF TRAFFIC DURING NIGHTTIME CONSTRUCTION

Distribution:
 Main Office (30) Consultants (34)
 Local Govt. (31) Contractors/AGC (39)
 Regions (32) _____ ()

Approved:
/s/ M. J. Cuddy Date: 01/18/05
M. J. Cuddy, Chief Engineer

LEADER

ACTORS OF IMPORTANCE FOR DETERMINING
IME VERSUS NIGHTTIME OPERATIONS IN OREGON

Night Operations Practices Guidebook

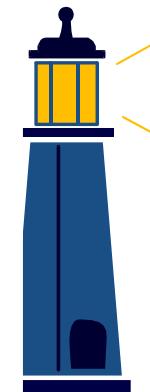
Sang-Bin Park and Kimberly D. Douglas, P.E.*
College of Engineering
Oregon State University

CONTRACT 2002-013 HIGHWAY 125

sjlas@orst.edu
P.E.

Douglas

FORNIA I REGION RUCTION



WORK GUIDE

NCHRP REPORT 476

NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

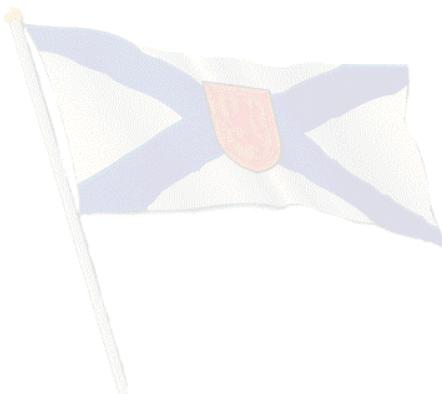
Guidelines for Design and
Operation of Nighttime
Traffic Control for Highway
Maintenance and Construction



TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

U.S. Department of Transportation
Highway Administration
Charlottesville, Virginia

August 1999
VTRC 00-R8



January 2000
Revised 01/02 |

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NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

Assessing and
ighway Con-
Maintenance

TRANSPORTATION RESEARCH BOARD

NATIONAL RESEARCH COUNCIL

Night Work Specification

- Work periods
- Planning
- Training
- Signing
- Channelization Devices
- Traffic Control Persons
- Workers
- Work Vehicles
- Lighting
- Site Maintenance

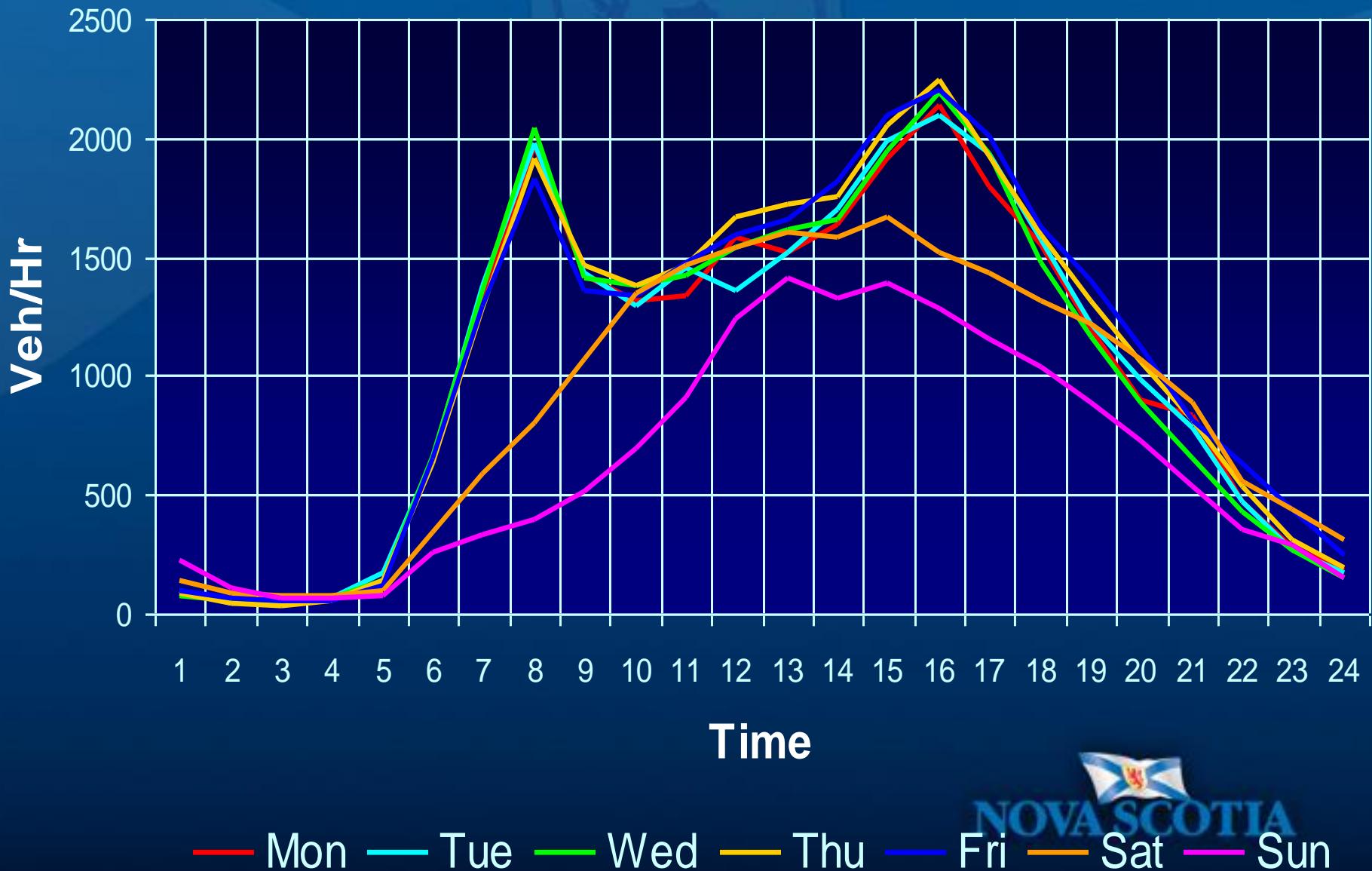


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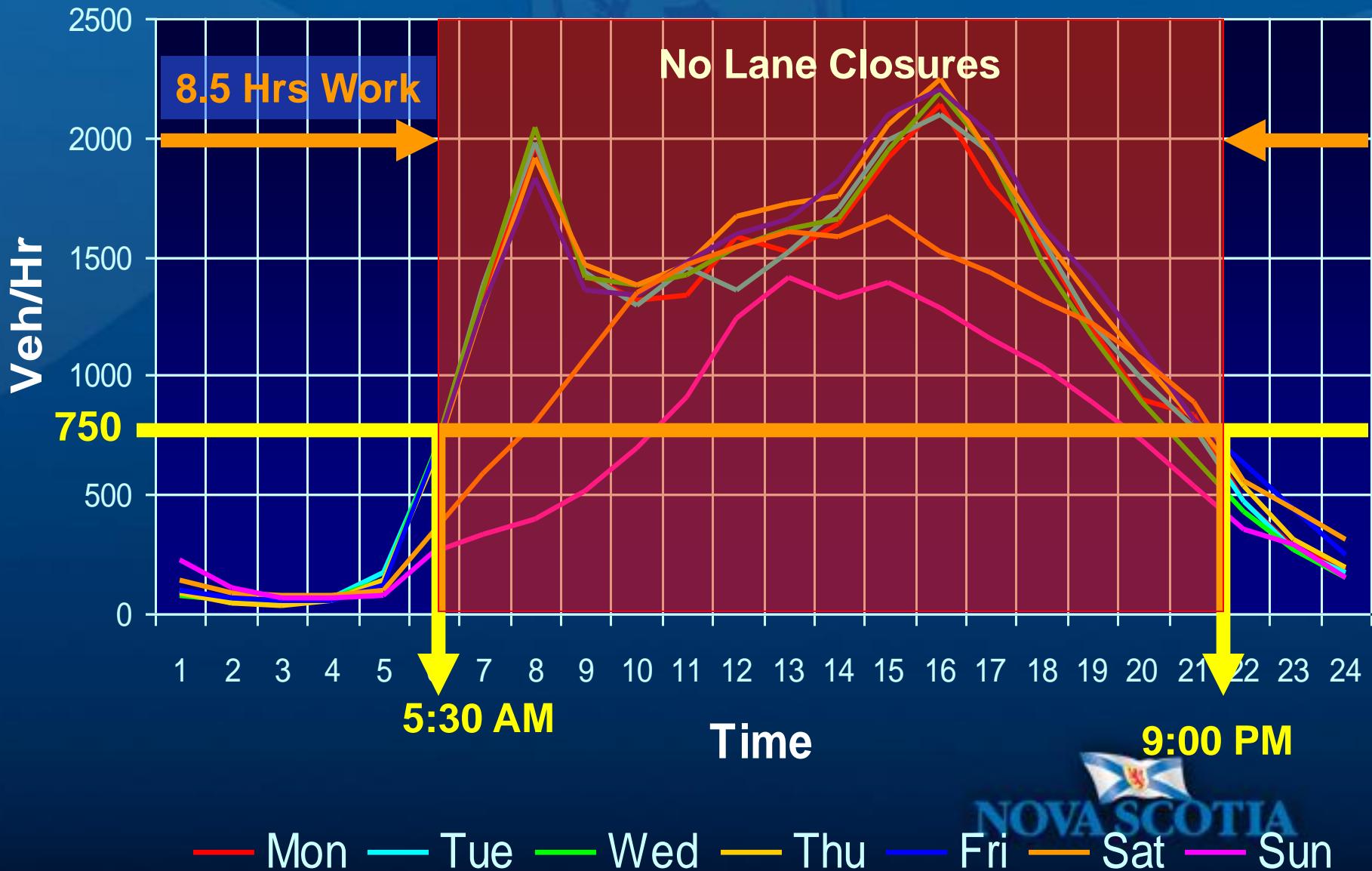


Hwy 125 - Hourly Traffic Volume - Aug/02



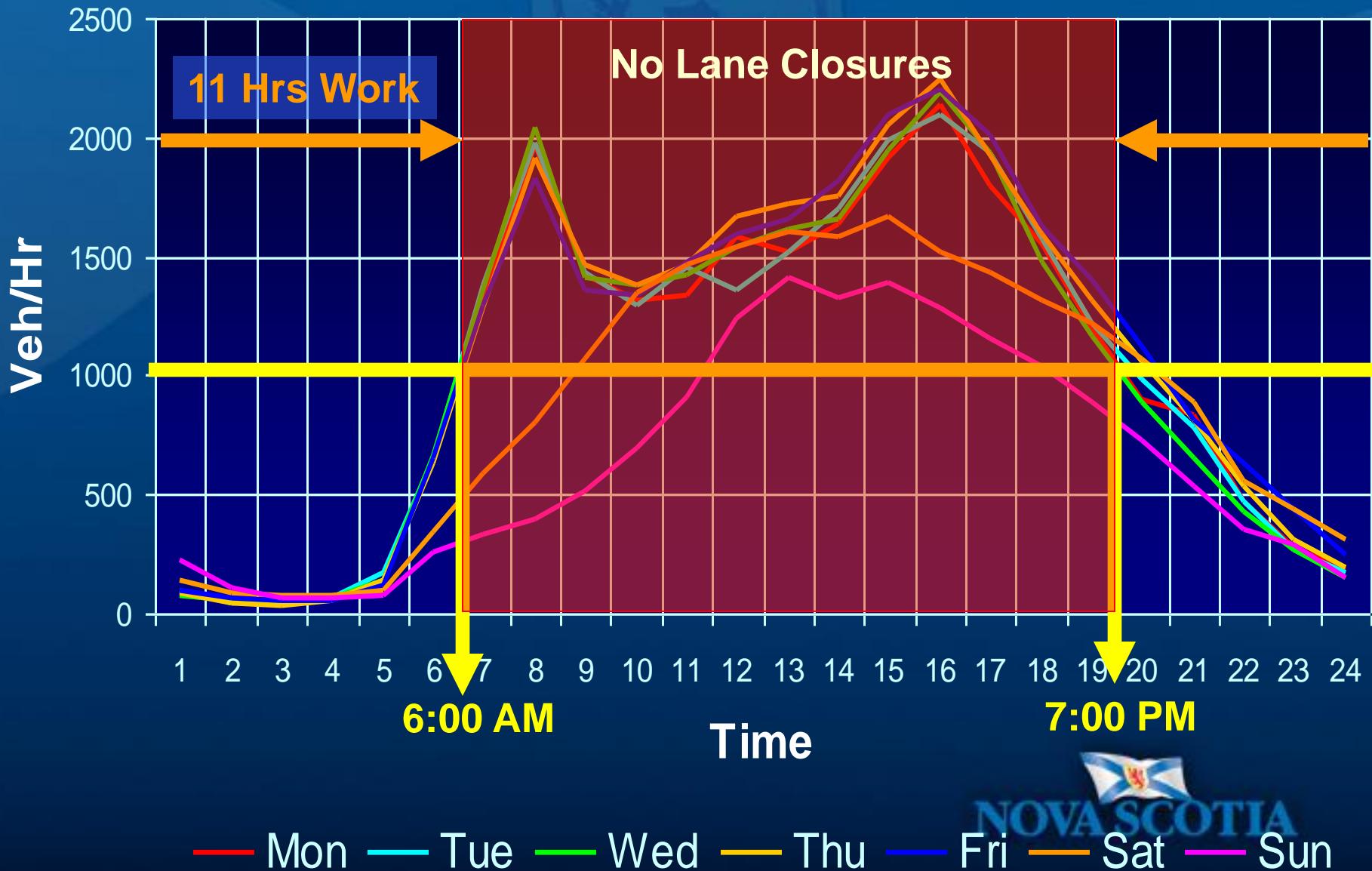
NOVA SCOTIA

Hwy 125 - 750 Veh/Hr Restriction



NOVA SCOTIA

Hwy 125 - 1000 Veh/Hr Restriction



NOVA SCOTIA

Night Work Specification

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Nighttime Work Plan

- ❖ Traffic control
- ❖ Emergency vehicles
- ❖ Temporary markings
- ❖ Lighting design
- ❖ PPE requirements
- ❖ Training plans
- ❖ Noise reduction

NIGHT WORK SPECIFICATION

Highway 125

Tender 60104031

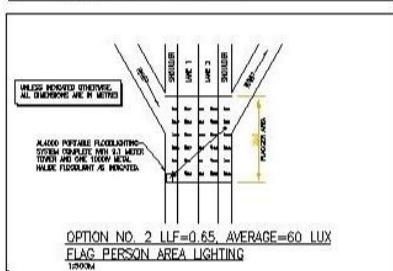
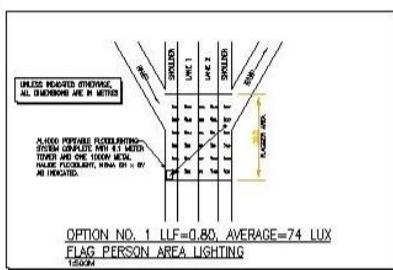
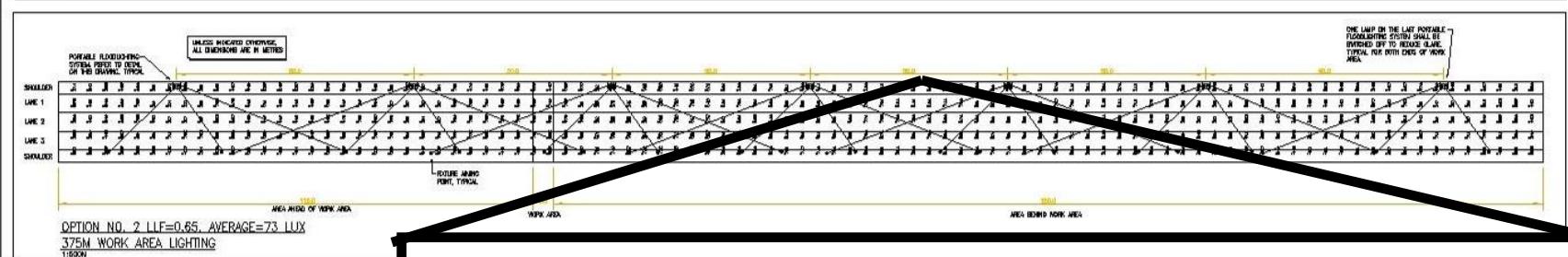
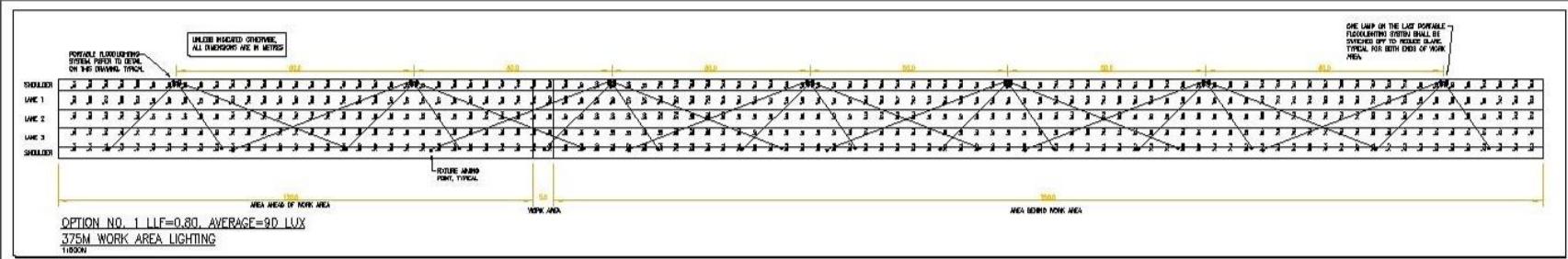


Submitted By:
MUNICIPAL READY-MIX LTD

P.O. Box 237
Sydney, N.S.
B1P 6H1

Phone 902-564-4541
Fax 902-562-6057

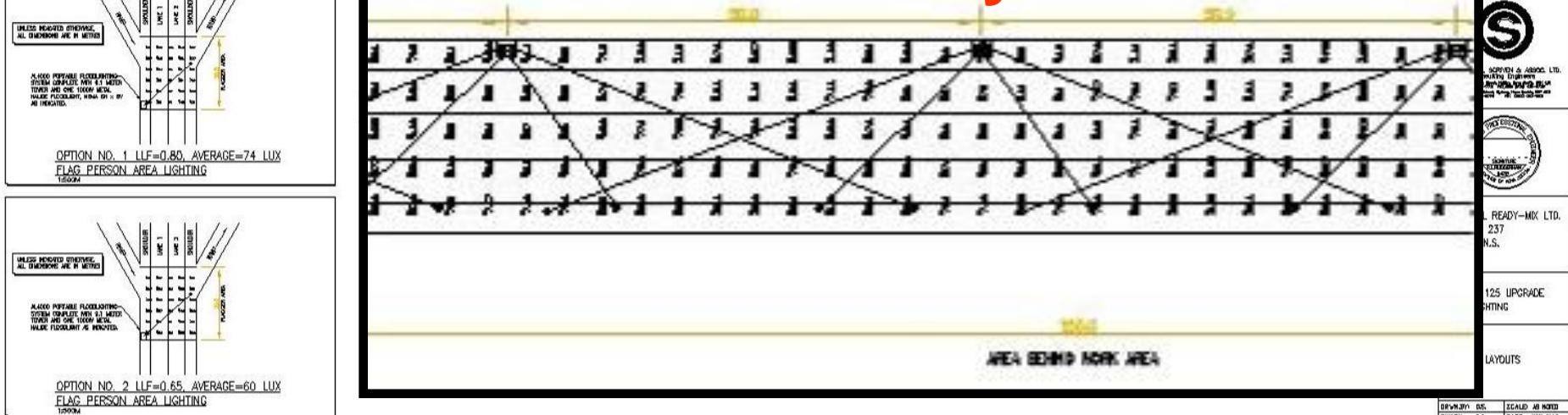
Lighting Design



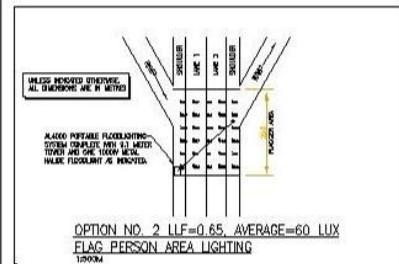
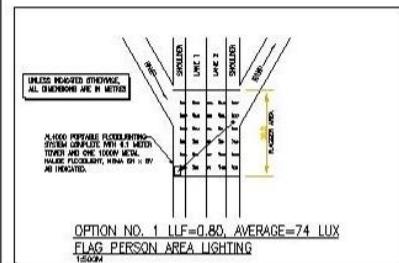
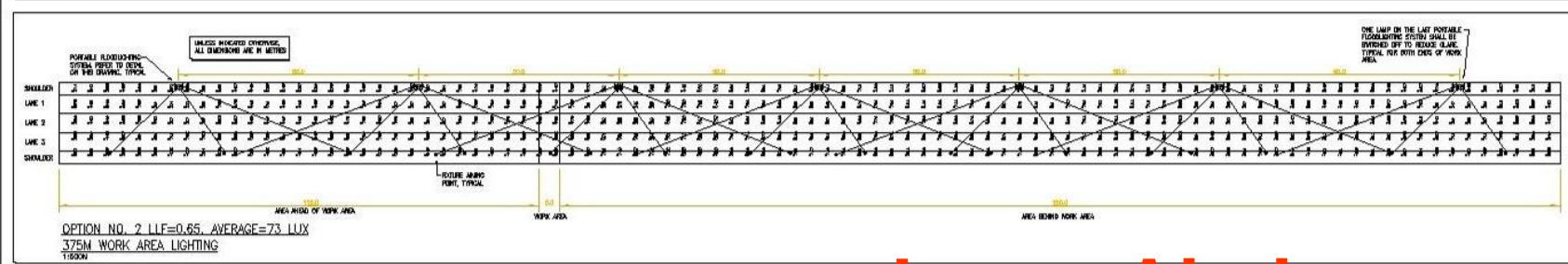
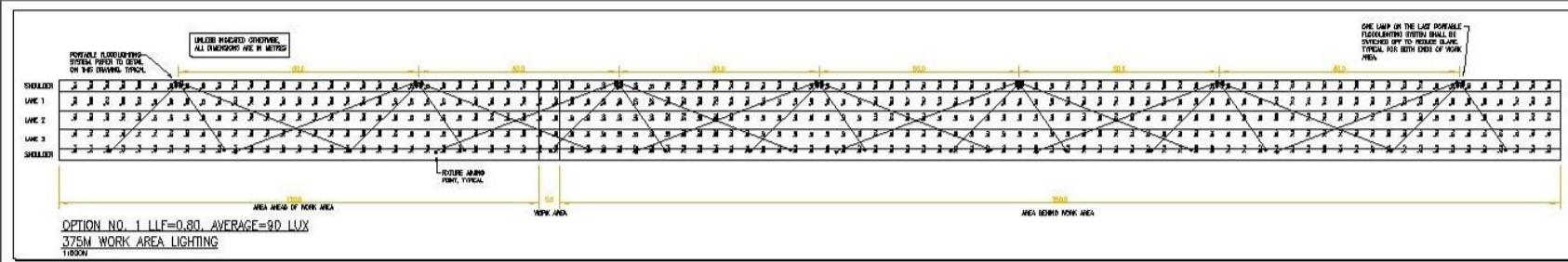
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CHGT. BY: EA	DATE: JULY 2002
APPROVED BY: EA	JOB NO: 02-01
DRAWING NO:	REV NO:

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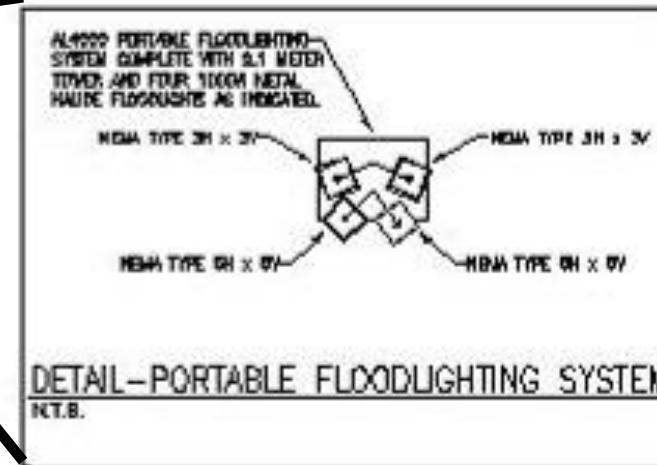
Tower Layout



Lighting Design

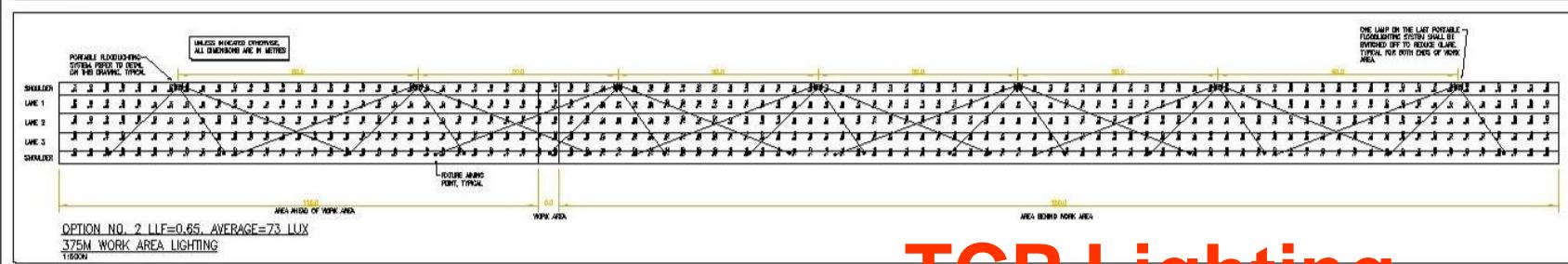
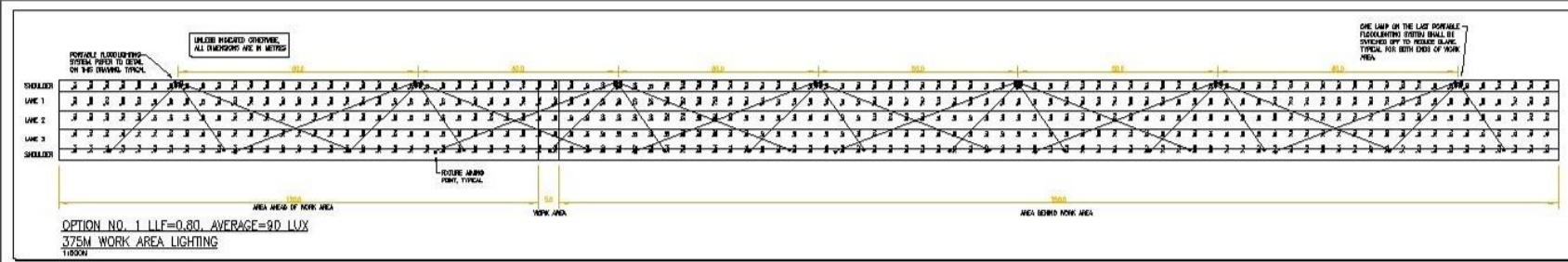


Lamp Aiming

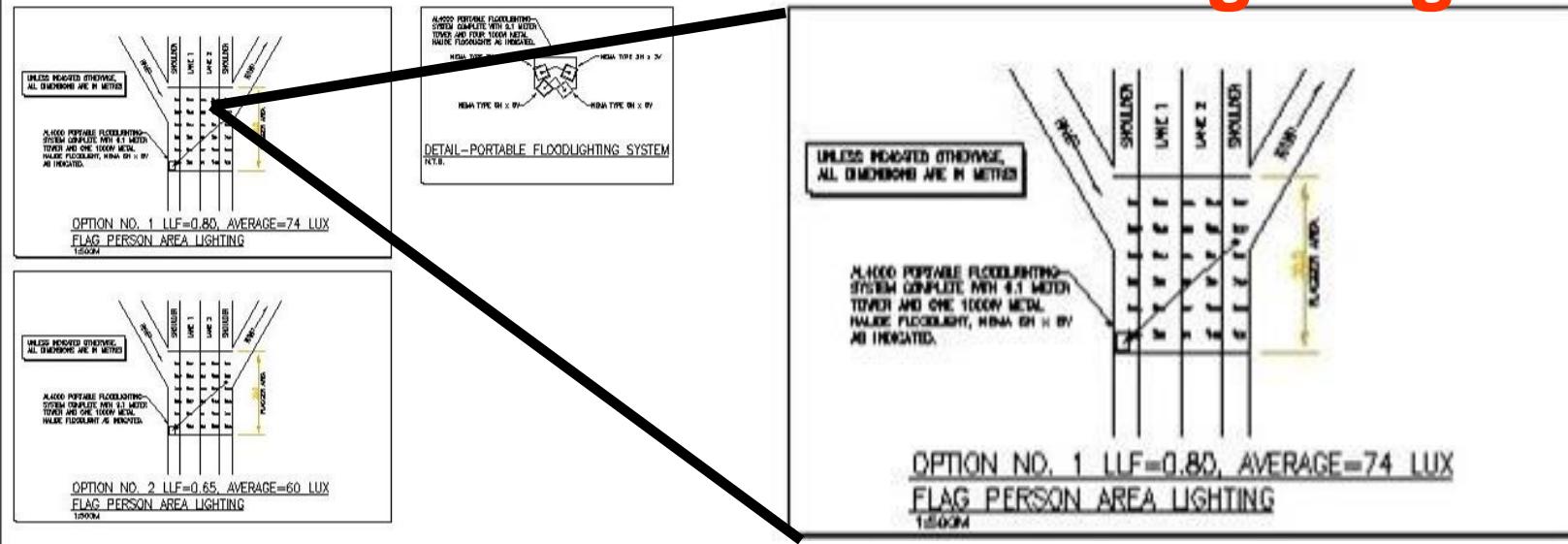


NO.	REVISIONS	DATE
 F.C. O'NEILL, MARCHET & ASSOC. LTD. <i>Construction Engineers</i> Suite 200, 1000 Lakeshore Road Mississauga, Ontario L5J 1G2 (905) 669-2000		
SEAL		
CLIENT		
MUNICIPAL READY-MIX LTD.		
P.O. BOX 237		
SYDNEY, N.S.		
B1P 6H1		
PROJECT		
HIGHWAY 125 UPGRADE		
NIGHT LIGHTING		
TITLE		
LIGHTING LAYOUTS		
BROWNSVILLE DS	SCALED AS NOTED	
CHESTY. ER	DATE: JULY 2002	
APPROVED BY ER	JOB NO: 00-001	
DRAWING NO.	REV. NO.	
E-1 of 1		

Lighting Design



TCP Lighting



NO.	REVISIONS	DATE
<p>F.O. O'NEILL, SMITH & ASSOC. LTD. CONSULTING ENGINEERS 1500 DUNLEATHY AVENUE SUITE 100, TORONTO, ONTARIO CANADA M3J 2L5 TELEPHONE: 416-490-1500</p>		
SEAL		
<p>THE TCP ENGINEERING CORPORATION GENERAL CONTRACTORS ARCHITECTS ENGINEERS CONTRACTORS DESIGNERS MANUFACTURERS SUPPLIERS DISTRIBUTORS INQUIRIES 1500 DUNLEATHY AVENUE SUITE 100 TORONTO, ONTARIO CANADA M3J 2L5 TELEPHONE: 416-490-1500</p>		
CLIENT	MUNICIPAL READY-MIX LTD. P.O. BOX 237 SYDNEY, N.S. B1P 6H1	
PROJECT	HIGHWAY 125 UPGRADE NIGHT LIGHTING	
TITLE	LIGHTING LAYOUTS	
BRIEFING DS	SEALED AS NOTED	
CHGT. BY	DATE: JULY 2002	
APPENDIX E	JOB NO.: 02-01	
DRAWING NO.	REV. NO.	
E-1 of 1		

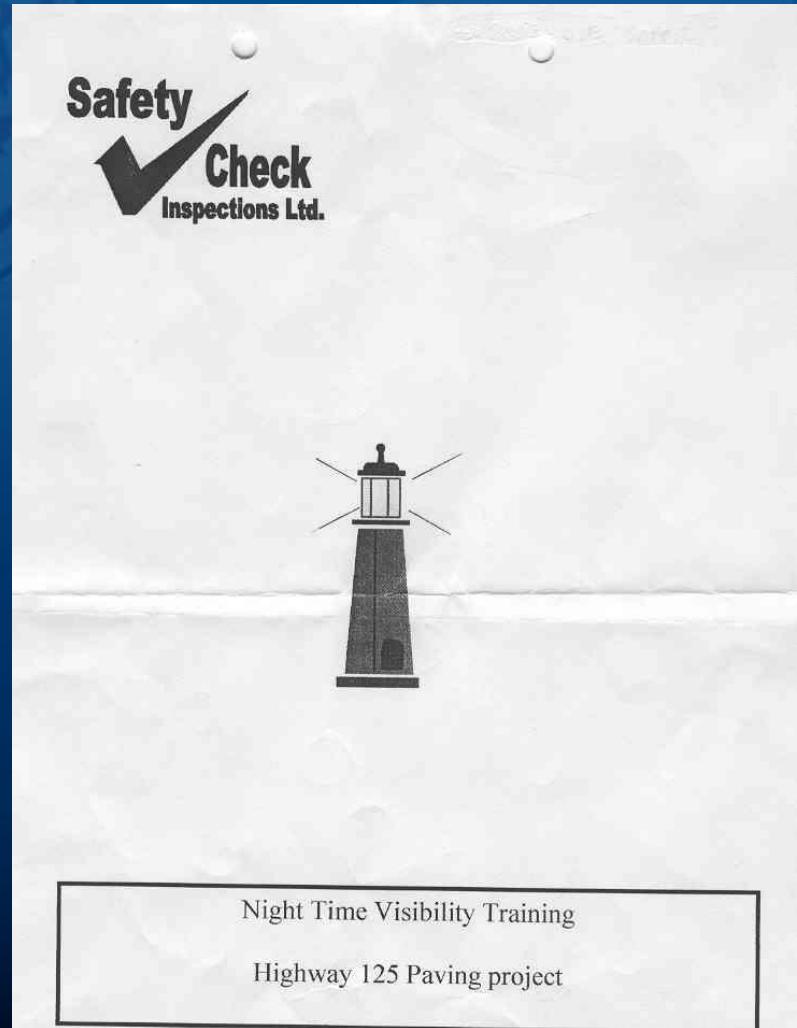
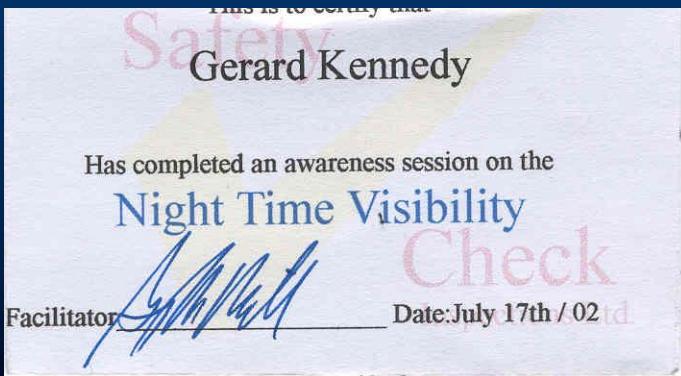
Night Work Specification

- Work periods
- Planning
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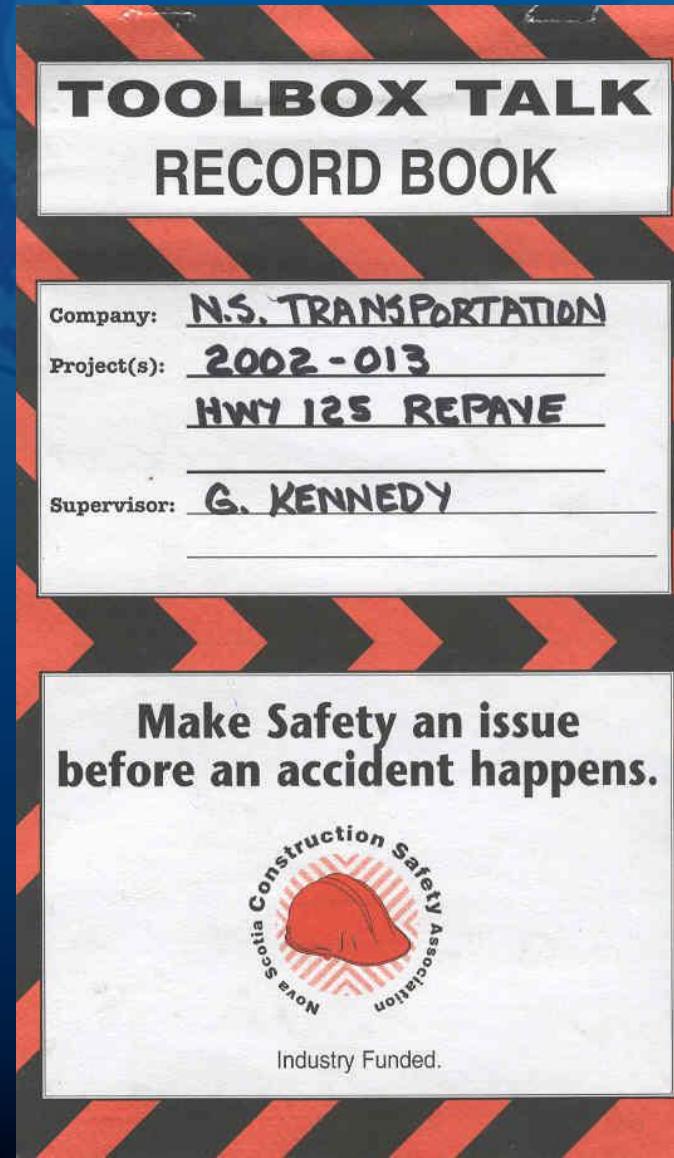
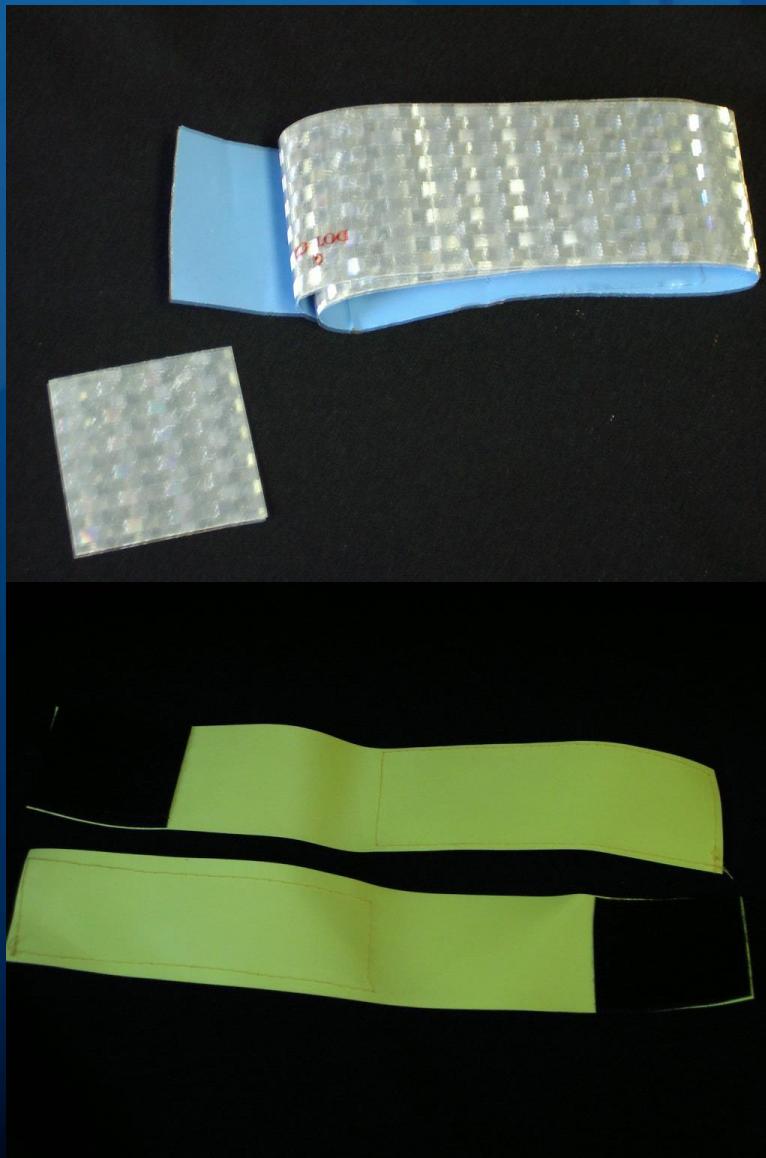
Night Work Training

- ❖ Night work hazards
- ❖ Vision
- ❖ Visibility
- ❖ Reflective Materials
- ❖ PPE & site Req'mts





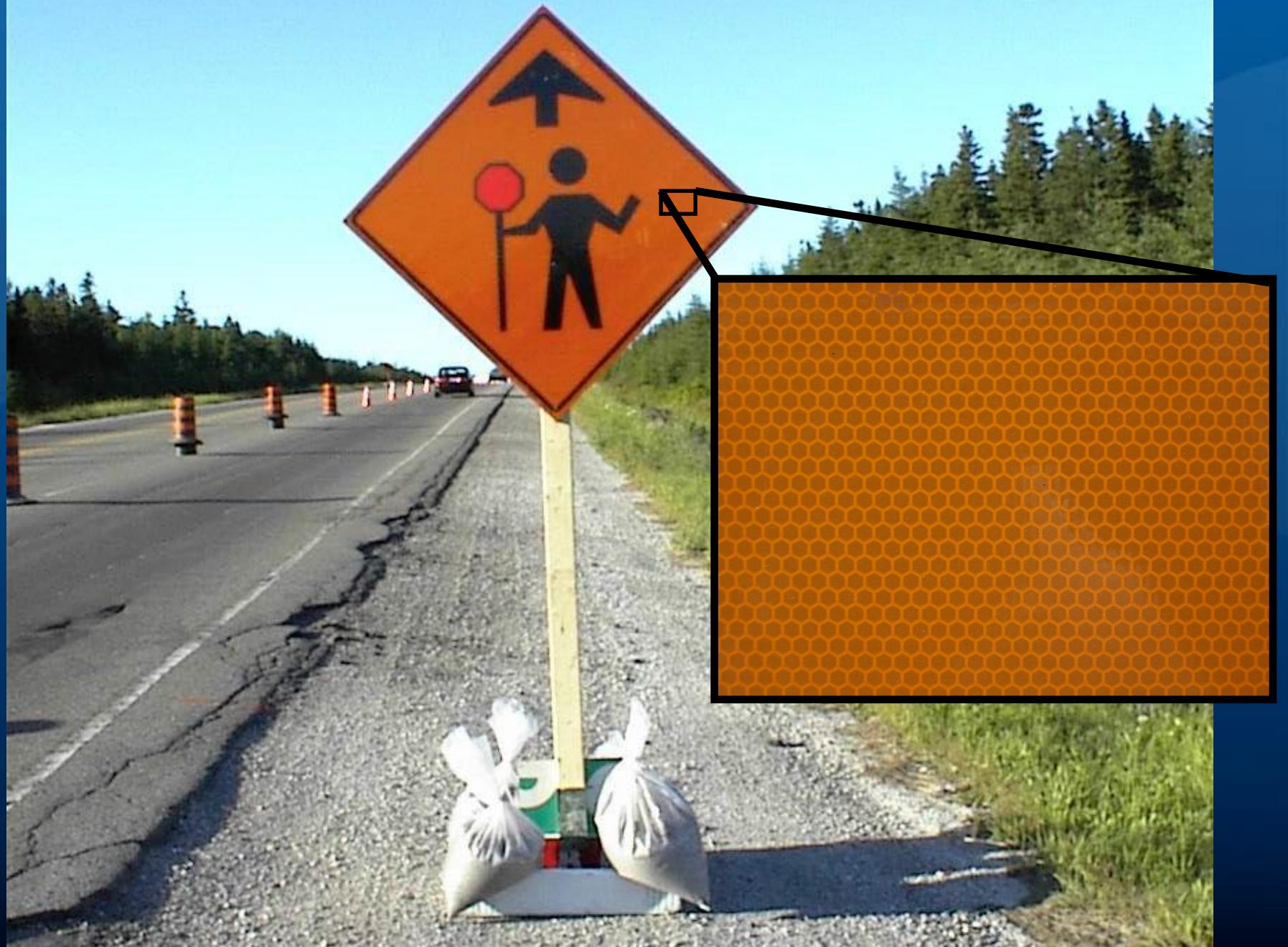
Night Work Training – Site

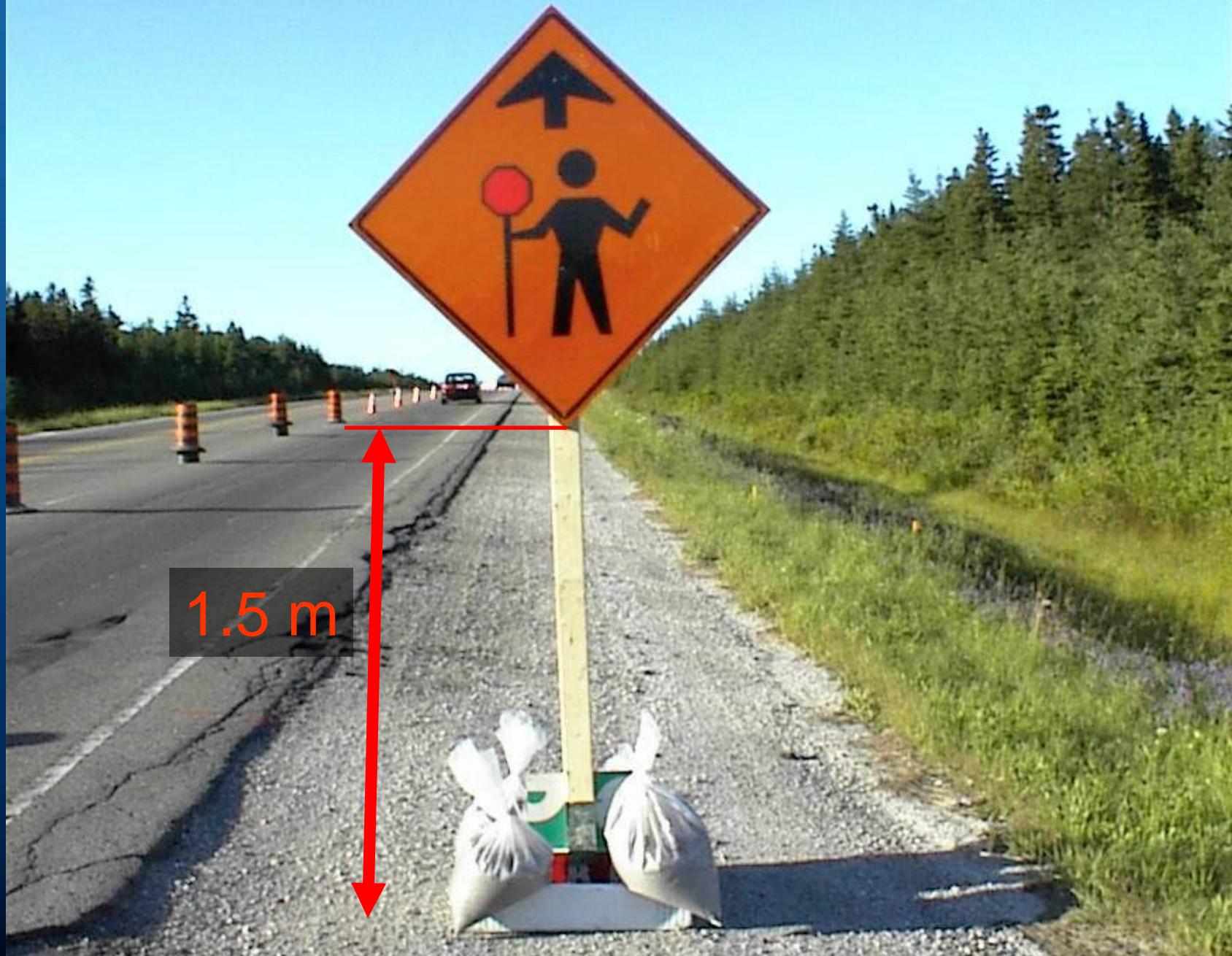


Night Work Specification

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1



2



Night Work Specification

- Work periods
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12 M
Max



Night Work Specification

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STOP

5 m



STOP

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“Standard” Vest







High-Visibility Vest



High-Visibility Vest





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A large dump truck is shown from a rear three-quarter perspective at night. The truck is dark-colored with red and white reflective stripes on its side. A prominent orange rectangular sign is mounted on the back of the truck, displaying the text "WORK VEHICLE" on top and "DO NOT FOLLOW" below it in black capital letters. The truck's rear lights are illuminated, showing red and white patterns. To the left, a car with its headlights on is visible, driving away from the viewer. The scene is set on a road with a grassy embankment on the right and a street lamp on the left emitting a bright glow. The overall atmosphere is dark and suggests a nighttime construction or maintenance operation.

WORK VEHICLE
DO NOT FOLLOW



**WORK VEHICLE
DO NOT FOLLOW**





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Lighting Levels

- Level 1 : General Site Lighting – min 59 lux (Safety)
- Level 2 : Behind the Paver – min 108 lux (Workmanship)
- Level 3 : T C Person – min 215 lux (High Visibility/Detailed Work)



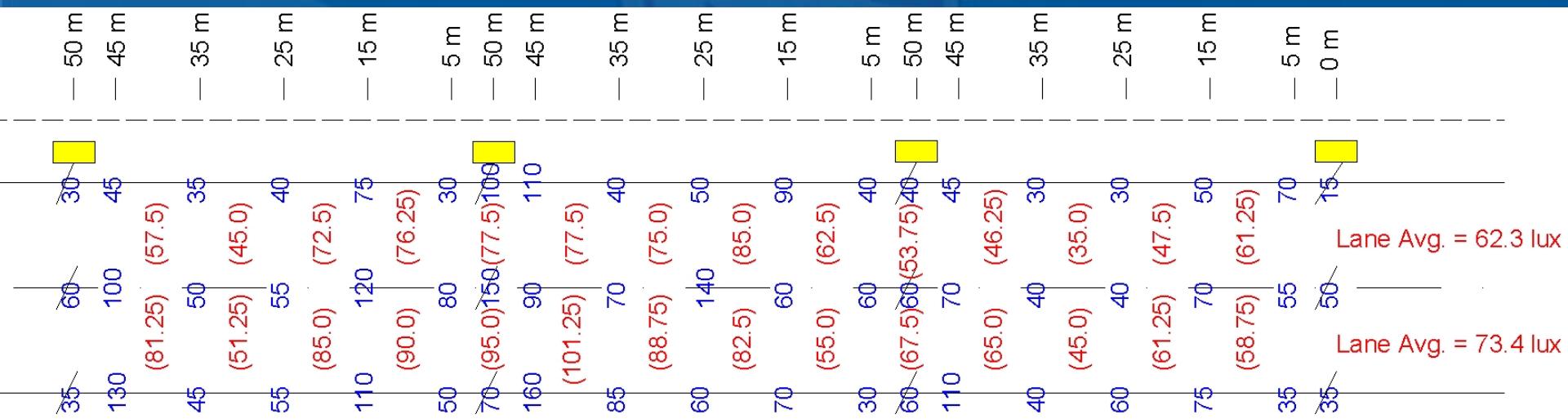






A

Illumination Levels – 2 Lanes



Blue - Illumination Measurements by ONS {lux}

(Red) - Average Illumination for 10m section of lane {lux}

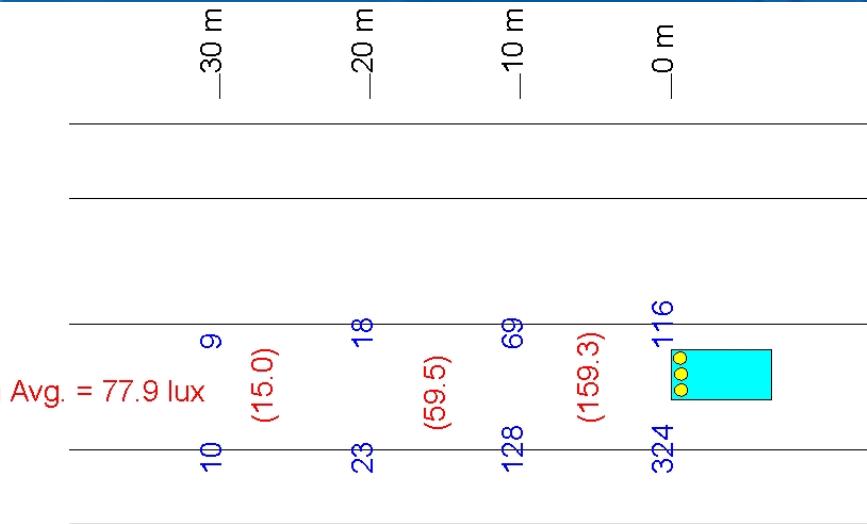
ons : Asphalt surface - old & weathered
 Atmospheric Light - less than 1 lux
 Start measure at 10 PM - July 24/02
 Lights set up as per ONS design

Revision : 0

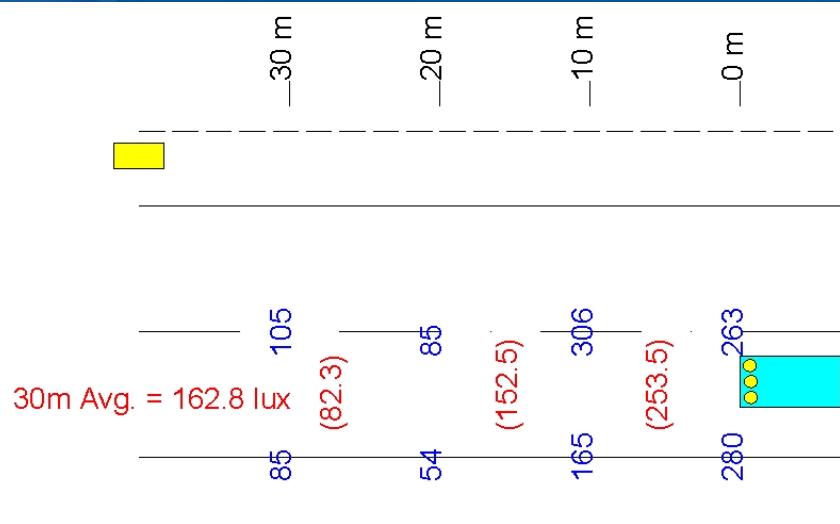
Hwy 125 - Lighting Trial



Illumination Levels – Spreader



Paver Lights outside Lighted Area



Paver Lights inside Lighted Area

Blue - Illumination Measurements by GK {lux}

(Red) - Average Illumination for 10m section of lane {lux}

Site Conditions : Asphalt surface - old & weathered
Atmospheric Light - less than 1 lux
Start measure at 10 PM - Aug 07/02
Lights set up as per ONS design

Revision : 0

**Hwy 125 - Paver Light
(N.T.S.) Pg 1 of**







Cedarapids

SB-2500B

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ATSSA

“Guidelines for Work Zone Traffic Control Devices”



Site Inspection

NIGHT WORK INSPECTION			
Transportation and Public Works			
Date/Location :		Pg _____	
ITEM INSPECTED		REQUIRED ACTION	ACTION CODE
			DATE COMPLETED
1.0 HOURS OF WORK			
1.0.0 Compliance with Limits			
1.1 Signage			
1.1.1 Materials & Condition			
1.1.2 Placement			
1.1.3 Flashing Light Units			
1.1.4 Manual Compliance			
1.2 Channelization Devices			
1.2.1 Materials and Condition			
1.2.2 Placement			
1.3 Traffic Control Persons			
1.3.2 Illumination			
1.3.3 Visibility			
1.4 Workers			
1.4.2 Visibility			
1.5 Work Vehicles			
1.5.2 Visibility			
1.5.3 Flashing Lights			
1.5.4 ReflectORIZED Markings			
1.5.5 Truck Message Signs			
1.5.6 Truck Turning			
1.6 Lighting			
1.6.2 Illuminance			
1.6.3 Glare			
1.7 Accommodation of Traffic			
1.7.1 Delays			
1.8 Site Maintenance			
1.8.1 Traffic Control Maint.			
1.8.2 Lane Openings			
1.9.01 Variable Message Signs			
1. Location			
1. Message			

INSPECTOR _____



Hwy 125 Night Work

- ❖ Project Background
- ❖ Specification Development
- ❖ Traffic Management



Traffic Management

- Restricted Work Periods
- Emergency Vehicle Passage
- Variable Message Signs
- Media Announcements
- Toll Free Information Line

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Traffic Management

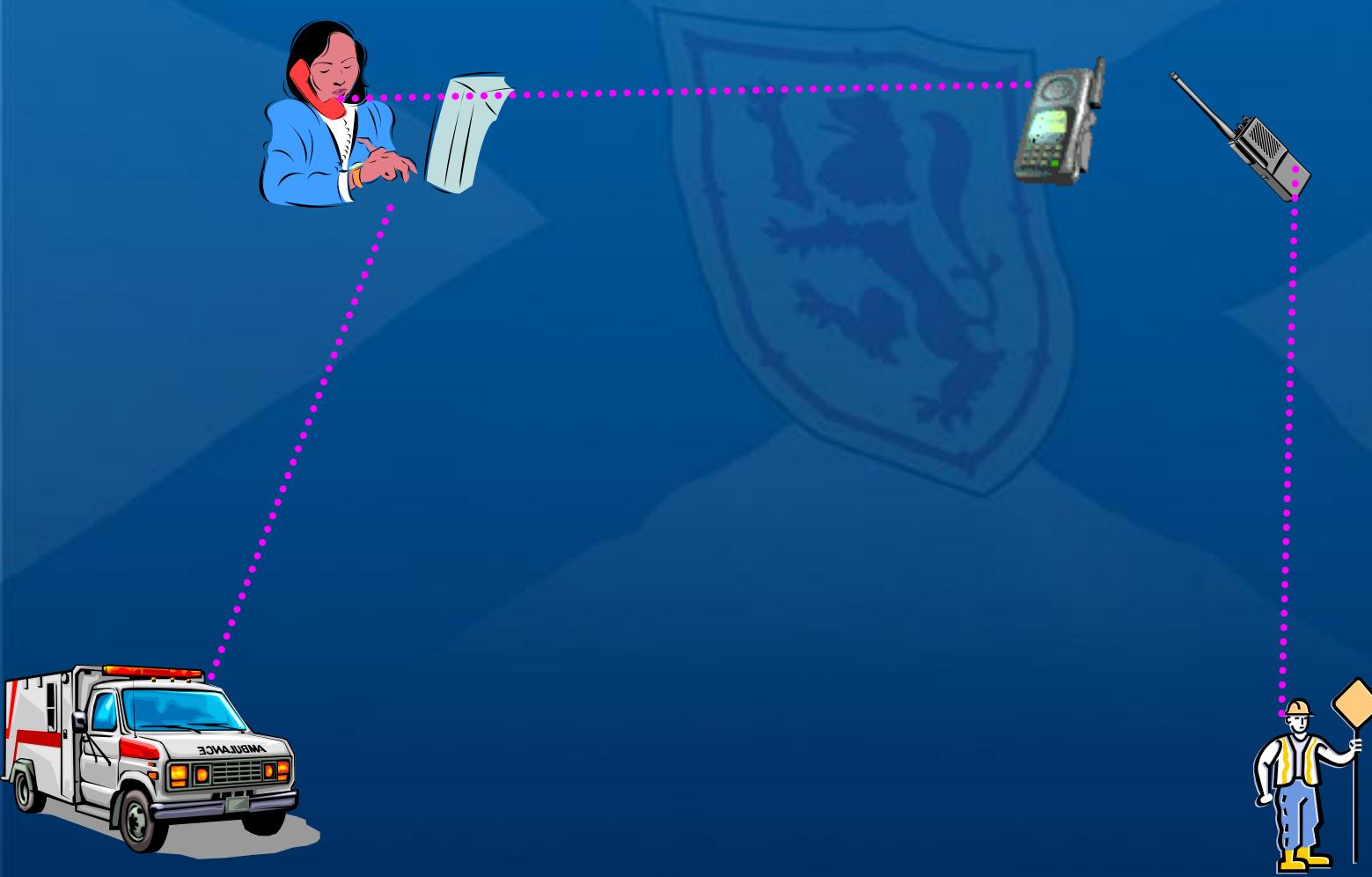
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Emergency Vehicle Passage

- ❖ Emergency Services Meeting
- ❖ Dedicated Site Contact
- ❖ Traffic Control & Site Communications





NOVA SCOTIA

Traffic Management

- Restricted Work Periods
- Emergency Vehicle Passage
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**EXPECT
DELAYS**



Typical VMS Messages



NOVA SCOTIA

ROADWORK
EXIT 8
TO EXIT 7

EXPECT
DELAYS

Traffic Management

- Restricted Work Periods
- Emergency Vehicle Passage
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- Toll Free Information Line



Regular Newspaper Updates

Sydney Bypass - Seal Island Bridge INFO LINE 1-866-720-2800

NOVA SCOTIA DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

2002

ROAD REPORT

CAPE BRETON REGIONAL MUNICIPALITY:

From tonight at 7 p.m. until Friday at 6 a.m., between Exit 6 at King's Road and Exit 8 at George Street, traffic will be reduced to one lane. Motorists can expect delays of up to 20 minutes between 7 p.m. and 9 p.m. Delays for all other times should be under 15 minutes.

Motorists are reminded that for the duration of the project, the speed limit between Exit 6 at King's Road's and the end of the highway at Grand Lake Road is reduced from 100 km per hour to 80 km per hour.

INVERNESS COUNTY:

Trans-Canada Highway 105 will be reduced to one lane for cold planing, climbing lane construction and paving near Melford, from Exit 3 westerly about three kilometres. Traffic control will consist of traffic control persons, signs and flashing lights. Work takes place from 6 a.m. to 9 p.m. and is expected to be completed by Sept. 30.

VICTORIA COUNTY:

Trans-Canada Highway 105 Seal Island Bridge will have a lane closure for deck replacement. Traffic control will consist of traffic lights. Work will take place 24 hours a day and is expected to be done by Oct. 15.

Traffic Management

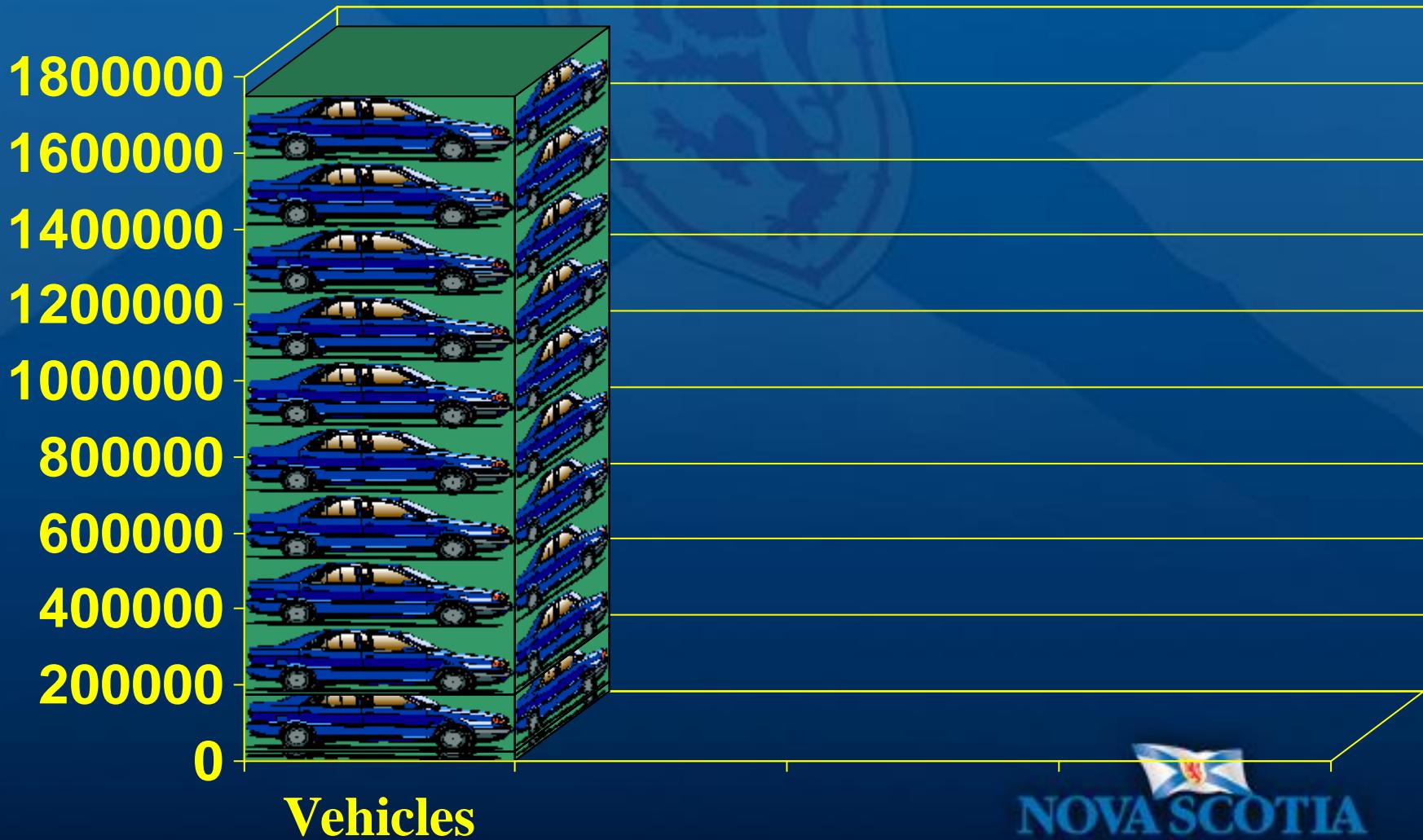
- Restricted Work Periods
- Emergency Vehicle Passage
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HWY INFO LINE

1—866—720—2800

Hwy 125 - Trips During Construction



NOVA SCOTIA

Traffic Management - Success

Trips during construction > 1.5 million

Delay & work zone related complaints = 0



? Questions ?



Contact Information

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Project Engineer

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