



FROZEN ROAD OPERATION IMPROVEMENTS

Project 07-04
May 2009

Midwest Regional University Transportation Center
College of Engineering
Department of Civil and Environmental Engineering
University of Wisconsin, Madison

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EXHIBIT B

Technical Report Documentation Page

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<p>16. Abstract</p> <p>A research study in 1996-1997, sponsored by WisDOT, was undertaken by the PI of this proposal to develop a computer model to correlate climate and pavement data for the year in progress in order to project when to impose and lift weight restrictions. Our research team collected field data relating to weather and road stiffness over two winter-spring periods, which enabled the development of a six-phase computer model integrating weather conditions, heat transfer, roadway stiffness, stress-strain effects, and estimates of pavement damage load (EDL) for a given road 30, 60, 90, or 120 days into the future based on user-supplied average daily temperatures experienced in the year to date.</p> <p>WisDOT's Bureau of Highway Operations, (BOH) used this software, known as UWFROST, during the '98-'99 and '99-'00 winter seasons and found the software's fall freezing and spring thawing projections to be quite accurate for normal winters.</p> <p>Since this study was conducted, additional data has been collected using frost tubes to declare the roads frozen and then unfrozen. Changes in Wisconsin climate have also been noted which will affect the model. More data has been collected at the national level, which relates pavement material moduli to temperature. All of which needs to be integrated into an updated version of the model.</p>			
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Frozen Road Operation Improvements

by

Peter J. Bosscher

(compiled by Tuncer B. Edil)

a report to the Midwest Regional University Transportation Center
(MRUTC)
for the contract withy the Wisconsin Department of Transportation
0092-06-11

Department of Civil and Environmental Engineering
University of Wisconsin-Madison
Madison, Wisconsin 53706
USA

May 11, 2009

Problem Statement

Road life is shortened and maintenance costs go up when vehicles carrying too-heavy loads travel on roads that can't adequately support their weight, causing cracking and rutting.

To protect flexible-pavement roads, Wisconsin has a year-round weight limit of 80,000 pounds gross weight with special overweight permits for log trucks up to 90,000 pounds. In mid-winter, when roads are frozen solid, a 98,000-pound limit without a permit takes effect. This allows trucks hauling logs, salt or winter abrasives to increase loads and take advantage of direct routes on secondary state roads, saving time and money.

In spring, however, frozen pavements, bases and subgrades begin to thaw, soften and take on water, making them more vulnerable to damage. This temporarily reduces allowed loads during the spring by as little as 20% (lowering the year-round 80,000-pound limit to 64,000 pounds) and has been shown to increase pavement life by as much as 60%.

Knowing when to impose spring weight restrictions and when to lift them has been a perennial challenge, especially since WisDOT tries to make these decisions two weeks in advance to allow for adequate notification of highway users. Restricting truck weights longer than necessary may prevent farmers, loggers and others from legitimate use of the roadways. However, a late imposition of spring limits or premature return to normal limits raises costs for everyone if roads are damaged and require more repairs and earlier replacement.

A research study in 1996-1997, sponsored by WisDOT, was undertaken by Peter Bosscher to develop a computer model to correlate climate and pavement data for the year in progress in order to project when to impose and lift weight restrictions. The research team collected field data relating to weather and road stiffness over two winter-spring periods, which enabled the development of a six-phase computer model integrating weather conditions, heat transfer, roadway stiffness, stress-strain effects, and estimates of pavement damage load (EDL) for a given road 30, 60, 90, or 120 days into the future based on user-supplied average daily temperatures experienced in the year to date.

WisDOT's Bureau of Highway Operations, (BOH) used this software, known as UWFROST, during the '98-'99 and '99-'00 winter seasons and found the software's fall freezing and spring thawing projections to be quite accurate for normal winters.

Since this study was conducted, additional data has been collected using frost tubes to declare the roads frozen and then unfrozen. Changes in Wisconsin climate have also been noted which will affect the model. More data has been collected at the national level, which relates pavement material moduli to temperature.

Research Objectives

The UWFROST software is organized currently as shown in Figure 1. The work proposed was to make improvements to the existing software with special emphasis to improving the:

1. Weather model
2. Soil temperature model
3. Material behavior (modulus) model
4. Prediction/damage algorithm.

Work Done

The PI Peter J. Bosscher passed away unexpectedly and a search through his records indicated that he is the only one who could make changes to UWFROST since he created it alone. However, Peter Bosscher had already been in contact and worked closely with key WisDOT personnel on this software and its use over several years. This has been done on a volunteer basis once the project was completed in 1998. Though this work has been collaborative, however, finances or the exchange of mutual benefit were not involved.

Certain materials related to the project have been extracted from his files and presented herein. WisDOT personnel can take this information into account in implementing the frost weight rules.

Notes on UWFROST

It is desired to run the software from any directory. This requires having the program located in one fixed and known location. It is suggested that it be C:\Program Files\University of Wisconsin\UWFROST\ Then the current directory needs to be recorded and used for some or all of the temporary storage files. When the UWFROST or WES programs are called, the calls need to point to fixed location. It is not known if WES can run from one location but gets its information from another directory.

Notes on UWFROST Performance

1. Zero Prediction causes problems (at least with Madison data). The reason is not known. Until this is determined, don't use zero prediction.
2. The soil temperature results seem correct based on examination of input temperatures.
3. Minor changes in depths can cause fairly dramatic changes in Half Axle Load

Conclusion:

Use Frost Depth results for Frozen Road and Spring Load Reduction Estimates

Frozen Road Declaration should be valid anytime frost gets into subgrade
Removal should be when frost leaves base

Spring Load Reduction should be two weeks before frost leaves subgrade
and last approximately 30 days thereafter.

Suggested Improvements:

1. Tie together the two isotherms (from top and from bottom in the spring)
2. Use this point + 30 days as the end of the thaw period
3. Use a point where the thaw enters the top of the base and stays for at least 5 days as the beginning of the thaw

Frozen Road Declaration History

Frozen road declaration history has been compiled and presented in Appendix A.

Ground Truth

Ground truth information was collected by him and made available attached to this report (Appendix B).

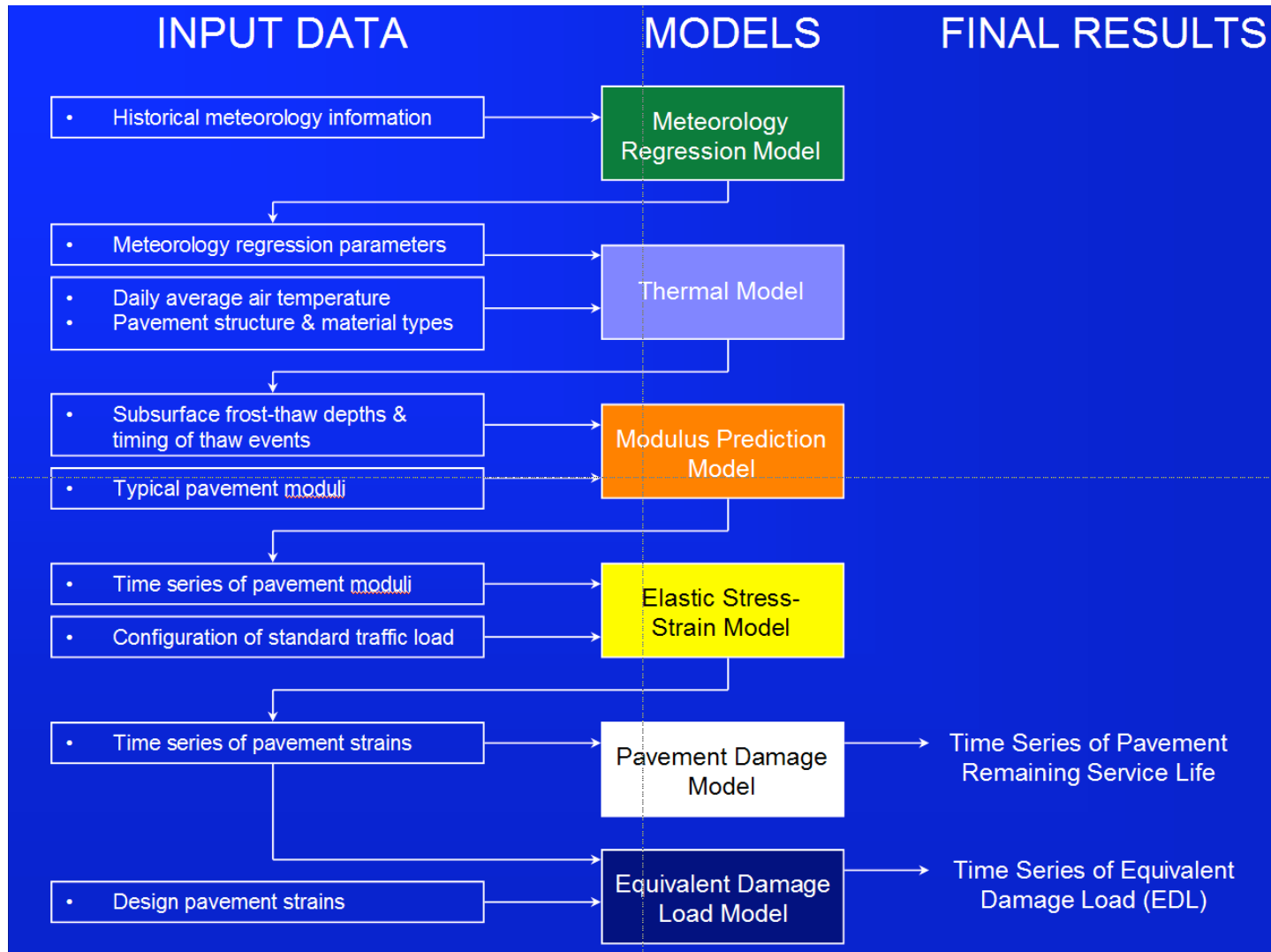


Figure 1. UW FROST Software Organization

APPENDIX A

FROZEN ROAD DECLARATION HISTORY

Frozen Road Declaration History

Year	Start	End	Extended to	No. of Days	No. of Weeks
1983-84	Dec. 19	March 2	March 16	88	13
1984-85	Dec. 17	March 1	March 7	82	12
1985-86	Dec. 16	Feb. 28	March 7	83	12
1986-87	Dec. 8	March 6		88	13
1987-88	Dec. 21	Feb. 26		67	9.5
1988-89	Dec. 19	Feb. 24	March 10	82	12
1989-90	Dec. 18	March 2		75	11
1990-91	Dec. 17	March 1		75	11
1991-92	Dec. 15	March 1		77	11
1992-93	Dec. 21	March 1	March 8	77	11
1993-94	Dec. 20	March 7	Feb. 28	70	10
1994-95	Dec. 26	Feb. 27		63	9
1995-96	Dec. 18	March 4		76	11
1996-97	Dec. 16	March 3		77	11
1997-98	Dec. 22	March 1	Feb. 16	56	8
1998-99	Dec. 14 N. of US 10	March 8	March 1 N. of US 10	84	12
	Dec. 21 S. of US 10	March 1	Feb. 22 S. of US 10	70	10
1999-00	Dec. 27	Feb. 28		64	9
2000-01	Dec.18 N. of US 10		March 12 N. of Wis 29	83	12
	Dec.25 S. of US-10	Feb.26 S. of Wis 29		63	9
2001-2002	Dec. 31 N. of US 10	March 4	February 25	56	8
	Jan. 7 S. of US 10	March 4	February 25	49	7
2002-2003	Dec. 16	March 3	March 17	92	13
2003-2004	Dec 29 N. of USH 10	March 1		63	9
	Jan. 12 S. of USH 10	March 1		49	7
2004-2005	Dec 27 N. of USH 10				
	Jan 3 S. of USH 10				

20 Year Average	Dec.19	March 4		76	11
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20 Year Range:	Dec. 8 – Jan. 12	Feb. 16 – March 17		49-92	7-13
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APPENDIX B

GROUND TRUTH – FORST TUBE DATA

SURFACE COURSE

1/0/1900 Joe Sustaita

LOT #		1		3000		Tons		"B"	MIX	
LOCATION	STA	STA	LENGTH	WIDTH	SY	Tons	RATE			
SL-1										
5/3/2005										
Mid NB ML	74040	76950	2910	15	4850.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2910		4850.00	0	0.00			
SL-2										
5/3/2005										
Mid NB ML	73520	74040	520	15	866.67					
IS NB ML	76980	77860	880	12	1173.33					
OS NB ML	76100	77860	1760	12.5	2444.44					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			3160		4484.44	0	0.00			
SL-3										
5/3/2005										
OS NB ML	73520	76100	2580	12.5	3583.33					
IS NB ML	76200	76980	780	13.5	1170.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			3360		4753.33		0.000			
SL-4										
5/3-5/2005										
IS NB ML	73650	76200	2550	13.5	3825.00					
Mid NB ML	77966	78300	334	15	556.67					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2884		4381.67		0.000			
SL#	Length	RDN. #	Length	Width	RDN. #	Station	Location	Width	Core A	Core B
			Offset			Number	ID	Offset	Thickness	Thickness
#1	2910	0.567	1650	15	0.333	753+00	NB Mid	5.0		
#2	3160	0.719	2272	12.5	0.353	769+72	NB OS	4.4		
#3	3360	0.395	1327.2	12.5	0.409	748+47	NB OS	5.1		
#4	2884	0.435	1254.5	13.5	0.497	749+45	NB IS	6.7		
prog. by W. Anderson, March 16, 1999						SUBLOT 1 Middle of NB Main Lane SUBLOT 2 NB OS Lane and Shoulder SUBLOT 3 NB OS Lane and Shoulder SUBLOT 4 NB IS Lane and Shoulder				

SURFACE COURSE

1/0/1900 Joe Sustaita

LOT #		2		3000		Tons		"B"	MIX	
LOCATION	STA	STA	LENGTH	WIDTH	SY	Tons	RATE			
SL-1										
5/5/2005										
MB Mid Pull	78300	80350	2050	15	3416.67					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2050		3416.67	0	0.00			
SL-2										
5/5/2005										
NB Mid pull	80350	82900	2550	15	4250.00					
0	0	0	0	0	0.00					
0	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2550		4250.00	0	0.00			
SL-3										
5-5-6-05										
NB Mid pull	82900	84030	1130	15	1883.33					
NB Mid pull	84030	85520	1490	15	2483.33					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2620		4366.67		0.000			
SL-4										
5/6/2004										
NB Mid pull	85520	85730	210	15	350.00					
NB OS pull	77966	80500	2534	12.5	3519.44					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2744		3869.44		0.000			
SL#	Length	RDN. #	Length	Width	RDN. #	Station	Location	Width	Core A	Core B
			Offset			Number	ID	Offset	Thickness	Thickness
#1	2050	0.445	912.25	15	0.516	792+12	Mid pull	7.7		
#2	2550	0.221	563.55	15	0.618	809+14	Mid pull	9.3		
#3	2620	0.225	589.5	15	0.713	834+90	Mid pull	10.7		
#4	2744	0.516	1415.9	12.5	0.255	791+72	Outside	3.2		
prog. by W. Anderson, March 16, 1999						SUBLOT 1 Middle of NB Main Lane SUBLOT 2 Middle of NB Main Lane SUBLOT 3 Middle of NB Main Lane SUBLOT 4 Outside pull				

SURFACE COURSE

1/0/1900 Joe Sustaita

LOT #		3		3000		Tons		"B"	MIX	
LOCATION	STA	STA	LENGTH	WIDTH	SY	Tons	RATE			
SL-1										
5/6/2005										
NB OS pull	80500	83860	3360	12.5	4666.67					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			3360		4666.67	0	0.00			
SL-2										
5-6-9-05										
NB OS pull	83860	84620	760	12.5	1055.56					
NB IS pull	77966	79853	1887	13.5	2830.50					
0	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2647		3886.06	0	0.00			
SL-3										
5/9/2005										
NB IS pull	79850	82950	3100	13.5	4650.00					
0	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			3100		4650.00		0.000			
SL-4										
5-9-10-05										
NB IS Pull	82950	83350	400	13.5	600.00					
NB OS Pull	84620	85730	1110	12.5	1541.67					
NB IS Pull	83350	85050	1700	13.5	2550.00					
	0	0	0	0	0.00					
			0		0.00					
			3210		4691.67		0.000			
SL#	Length	RDN. #	Length	Width	RDN. #	Station	Location	Width	Core A	Core B
			Offset			Number	ID	Offset	Thickness	Thickness
#1	3360	0.555	1864.8	12.5	0.444	823+65	Outside	5.6		
#2	2647	0.631	1670.3	13.5	0.555	788+76	Inside	7.5		
#3	3100	0.455	1410.5	13.5	0.666	812+61	Inside	9.0		
#4	3210	0.333	1068.9	12.5	0.546	852+89	Outside	6.8		
prog. by W. Anderson, March 16, 1999						SUBLOT 1		Outside pull		
						SUBLOT 2		Inside Pull		
						SUBLOT 3		Inside Pull		
						SUBLOT 4		Outside pull		

HMAC
ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
 CONTROL: 0049-02-009

CONTRACTOR: Young Contractors, Inc.
 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

"B" Mix

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
5-9	3	4	829+50	833+50	13.5	NB Inside Pull
5-10	3	4	846+70	857+30	12.5	NB Outside Pull
5-10	3	4	833+50	850+50	13.5	NB Inside Pull

2996 . 22

SURFACE COURSE

1/0/1900 Joe Sustaita

LOT #	4	3000	Tons	"B"	MIX					
LOCATION	STA	STA	LENGTH	WIDTH	SY	Tons	RATE			
SL-1										
5-10-6-27		Contractor will core where "B" is still exposed for Sub 1.								
#####	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			0		0.00	0	#DIV/0!			
SL-2										
6/27/2005										
NB Mid Pull	108775	111300	2525	15	4208.33					
0	0	0	0	0	0.00					
0	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2525		4208.33	0	0.00			
SL-3										
6-27-28-05										
NB Mid Pull	111300	114000	2700	15	4500.00					
NB Mid Pull	114000	114160	160	15	266.67					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			2860		4766.67		0.000			
SL-4										
			0	0	0.00					
			0	0	0.00					
			0	0	0.00					
			0	0	0.00					
			0		0.00					
			0		0.00		#DIV/0!			
SL#	Length	RDN. #	Length	Width	RDN. #	Station	Location	Width	Core A	Core B
			Offset			Number	ID	Offset	Thickness	Thickness
#1	0	0.631	0	0	0.444	0+00	0	0.0		
#2	2525	0.595	1502.4	15	0.555	1102+77	NB Mid	8.3		
#3	2860	0.238	680.68	15	0.666	1119+81	NB Mid	10.0		
#4	0	0.752	0	0	0.546	0+00	0	0.0		
prog. by W. Anderson, March 16, 1999						SUBLOT 1 (See Note above Sub 1				
						SUBLOT 2 NB Mid Pull				
						SUBLOT 3 NB Mid Pull				
						SUBLOT 4				

HMAC

ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
7-1	5	4	1141+00	1180+00	12.75	NB LT P&H

$$3900' \times 0.561 = 2188'$$

$$\text{Sta } 1141+00 + 2188' = \text{Sta } 1162+88$$

$$12.75' \times 0.649 = 8.3' \quad 0/s$$

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

5" Max

DATE	LOT	SUBLOT	STATION	STATION	PAYING WIDTH	LOCATION
6-10	5	3	1106+00	1120+80	12.75'	110 - 1120
7-1	5	3	1120+80	1141+00	12.75'	110 - 1120

1480'

2020'

$3500' \times 0.218 = 763'$

$Sta 1106+00 + 763 = Sta 1113+63$

$12.75 \times 0.789 = 10.0' \text{ o/s}$

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)

CONTRACTOR: Young Contractors, Inc.

CONTROL: 0049-02-009

HIGHWAY: SH 6, Corridor # 1 & 2

ROADWAY INSPECTOR: David Beard

"B" mix

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
6-28	5	2	1196+50	1207+90	15'	NB Mid Pull
6-30	5	2	1087	1106+00	12.75'	NB LT Pull

1140'
+ 1900'

$$\frac{3040'}{0.675} = 2052'$$

$$2052' - 1140' = 912'$$

$$1087+00 + 912' = \text{Sta } 1096+12$$

$$O/S = 12.75 \times 0.312 = 4.0'$$

HMAC

ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)

CONTRACTOR: Young Contractors, Inc.

CONTROL: 0049-02-009

HIGHWAY: SH 6, Corridor # 1 & 2

ROADWAY INSPECTOR: David Beard

B mix

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
6-28	5	1	1168+00	1196150	15'	NB Main R.H

$2950' \times 0.851 = 2425'$

$1168+00 + 2425 = 1192+25$

$O/S \ 15' \times 0.815 = 12.2'$

HMAC

ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)

CONTROL: 0049-02-009

CONTRACTOR: _____

HIGHWAY: _____

ROADWAY INSPECTOR: _____

Young Contractors, Inc.

SH 6, Corridor # 1 & 2

David Beard

"B" mix

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
7-5	6	2	1108+00	1131+60	14'	NB Inside Pull
7-6	6	2	1131+60	1135+50	14'	NB Inside Pull

$2360'$

$390'$

$2750' \times 0.819 = 2252'$

Sta 1108+00 + 2252' = 1130+52

$14' \times 0.450 = 6.3' \text{ O/S}$

3" Mix

HMAC ROADWAY RANDOM NUMBERS

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CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-6-05	7	3	1087+00	1066+00	15	Mu Ln Middle VB

$2100' \times 0.562 = 1180'$

Sta 1087+00 - 1180' = Sta 1075+20

$15' \times 0.334 =$ 5.0' o/s

Marked

-B" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) **CONTRACTOR:** Young Contractors, Inc.
CONTROL: 0049-02-009 **HIGHWAY:** SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-6-05	7	4	1066+00	1046+80	15	Muler Middle NB
9-7-05	7	4	1046+80	1041+10	15	Muler Middle NB

$1920' + 570' = 2490'$
 $2490' \times 0.784 = 1952'$

$1046+80 - 32' = \text{Sta } 1046+48$

$15' \times 0.617 = 9.3' \text{ o/s}$

Marked

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)

CONTRACTOR:

Young Contractors, Inc.

CONTROL: 0049-02-009

HIGHWAY:

SH 6, Corridor # 1 & 2

"B" Mix

ROADWAY INSPECTOR:

David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
7-7-05	7	2	1206+00	1207+88	12.75	NB outside pull
7-7-05	7	2	1187+00	1180+61	11.58	LTL
7-7-05	7	2	1166+00	1159+52	11.50	LTL
7-7-05	7	2	1139+00	1133+38	10.50'	LTL
7-8-05	7	2	1107+00	1100+96	11.0'	LTL
		188'				
		639				
		648				
		562				
		<u>604</u>				
		$2641' \times 0.257 = 678'$				
		$678' - 188' = 490$				
		$Sta 118+61 + 490 = Sta 1185+51$				
		$11.58 \times 0.307 = 3.6'$				O/S

TB" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-7-05	8	3	1045+00	1029+20	13	outside lwd shld NB
9-8-05	8	3	1087+00	1072+00	13.5	inside lwd + shld NB
			$1580 + 1500 = 3080'$			
			$3080 \times 0.487 = 1500'$			
			Sta 1045+00 - 1500' = <u>Sta 1030+00</u>			
			$13 \times 0.588 = $ <u>7.6 %</u>			
			Marked			

"B" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) **CONTRACTOR:** Young Contractors, Inc.
CONTROL: 0049-02-009 **HIGHWAY:** SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-7-05	8	1	1041+10	1021+30	15	Med Ln Middle NB
9-7-05	8	1	1087+00	1078+00	13	Outside Med Ln Shld NB
			1970' ± 900' = 2870'			
			2870' x 0.818 = 2348			
			2348 - 1970 = 378'			
			Sta 1087+00 - 378 = (Sta 1083+22)			
			13' x 0.495 = (6.4 0/5)			
			Marked			

HMAC ROADWAY RANDOM NUMBERS

- "B" Mix

PROJECT: NH 2004(261) **CONTRACTOR:** Young Contractors, Inc.
CONTROL: 0049-02-009 **HIGHWAY:** SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-8-05	9	2	1071+80	1075+00	11.5	LTL
9-9-05	9	2	1073+00	1066+00	7.0	RTL
9-9-05	9	2	1075+00	1069+00	11.5	LTL
9-9-05	9	2	1059+00	1052+85	14	LTL
9-9-05	9	2	1043+00	1040+80	12	LTL
	320'					
	700'					
	600'					
	615					
	220					
	2455	X	0.835 =	2050'		
	320 + 700 + 600 =		1620			
	2050 - 1620 =		430'			
			Sta 1059+00 - 430 =	Sta 1054+70		
			14' X 0.315 =	4.4 o/s		

Mark Keef

"B" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT:	NH 2004(261)	CONTRACTOR:	Young Contractors, Inc.
CONTROL:	0049-02-009	HIGHWAY:	SH 6, Corridor # 1 & 2
		ROADWAY INSPECTOR:	David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-8-05	9	1	1045+00	1024+30	13.5	Inside Lnt Shld NB
9-8-05	9	1	1029+20	1024+30	13	outside Lnt Shld NB

$$2370 + 790 = 3160'$$

$$3160 \times 0.289 = 913'$$

$$\text{Sta } 1045+00 - 913 = \text{Sta } 1035+87$$

$$13.5 \times 0.699 = 9.4' \text{ O/S}$$

Marked

B" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-29	10	4	883+30	881+00	15	Middle Lns NB
9-30	10	4	881+00	857+00	15	Middle Lns NB
9-30	10	4	1021+30	1019+30	13.5	outside Lnd Shld NB
			230			
			2400 200			
			2830 x	0.918 =	2598'	
			2598 -	230 =	2368'	
			Sta 881+00 -	2368 =	Sta 857+32	
			15' x	0.398 =	6.0' %	
			Marked			

-1" B" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)

CONTRACTOR:

Young Contractors, Inc.

CONTROL: 0049-02-009

HIGHWAY:

SH 6, Corridor # 1 & 2

ROADWAY INSPECTOR:

David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-29	10	3	910+00	883+30	15	Middle Lvs NB
			2670 x 0.735 =			1962'
		Sta	910+00 - 1962 =		Sta 890+38	
		15'	x 0.390 =		5.9' %	
			Marked			

"B" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-3	11	4	908+60	895+00	13.5	outside L&W Shld NB
10-4	11	4	895+00	870+50	13.5	outside L&W Shld NB
			1360			
			<u>2450</u>			
			$3810 \times 0.842 =$			3208'
			$3208' - 1360 =$			1848'
			Sta 895+00 - 1848 =			Sta 876+52
			$13.5 \times 0.368 =$			5.0' o/s
			marked			

- 'B' Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) **CONTRACTOR:** Young Contractors, Inc.
CONTROL: 0049-02-009 **HIGHWAY:** SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-30	11	2	983+80	966+00	13.5	outside L & Shld NB
10.3	11	2	966+00	952+00	13.5	outside L & Shld NB
			1780			
			<u>1400</u>			
			3180 x 0.893 =	2840'		
			2840' - 1780 =	1060'		
			Sta 966+00 - 1060 =	Sta 955+40		
			13.5 x 0.526 =	7.1' %		
			Marked			

- "B" MIX

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR: Young Contractors, Inc.
HIGHWAY: SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-6	12	4	946+00	976+80	13.5	inside Lnd Shld NB
			3080x	0.251 =	77 3'	
		Sta	946+00 + 773 =			(Sta 953+73)
			13.5 x	0.399 =		(5.4' 0/5)
			Marked			

- "B" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-5	12	3	912+20	940+20	13.5	inside Lnd shld NB
10-6	12	3	940+20	946+00	13.5	inside Lnd shld NB
			$\begin{array}{r} 2800 \\ 580 \\ \hline \end{array}$			
			$3380 \times 0.609 =$		2058'	
			Sta 912+20 + 2058	=	Sta 932+78	
			$13.5 \times 0.311 =$		4.2' 0/5	
			Marked			

B²¹ M_{ix}

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-4	12	1	870+50	857+20	13.5	outside L _w shld NB
10-4	12	1	857+20	871+00	13.5	Inside L _w shld NB
10-5	12	1	871+00	879+40	13.5	Inside L _w shld NB
			1330			
			1380			
			<u>840</u>			
			$3550 \times 0.670 =$		2379'	
			$2379 - 1330 =$		1049'	
		Sta	$857+20 +$			Sta 867+69
			$13.5 \times$		$0.876 =$	11.8' 0/5
			Marked			

- "B" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-12	13	3	889+26	884+16	12	LTL
10-12	13	3	861+12	866+22	12	LTL
10-12	13	3	1036+72	1041+82	12	LTL
10-12	13	3	1106+87	1101+02	12	LTL
			510			
			510			
			510			
			585			
			<u>2115 x 0.635 = 1343'</u>			
			<u>1343 - 510 - 510 = 323'</u>			
			Sta 1041+82	-323'		Sta 1038+59
			12' x	0.414 =		5.0' o/s
			marked			

- "B" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-7	13	2	1012+80	1021+00	13.5	Turquoise L and Shld
10-11	13	2	1022+47	1017+37	12	LTL
10-11	13	2	962+17	957+07	12	LTL
10-11	13	2	933+70	928+60	12	LTL
10-11	13	2	917+15	912+05	12	LTL
			820			
			510			
			510			
			510			
			510			
			<u>2860</u>			
			$2860 \times 0.623 = 1782'$			
			$1782 - 820 - 510 = 452'$			
			Sta 962+17	- 452 =	Sta 957+65	
			12'	$\times 0.461 =$	5.5' 0/s	
			marked			

3" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)

CONTRACTOR: Young Contractors, Inc.

CONTROL: 0049-02-009

HIGHWAY: SH 6, Corridor # 1 & 2

ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-6	13	1	976+80	1002+80	13.5	inside hwd shld NB
10-7	13	1	1002+80	1012+80	13.5	Inside hwd shld NB
			2600			
			<u>1000</u>			
			3600	$\times 0.695 =$		2502
			Sta 976+80 + 2502 =			Sta 1001+82
			13.5	$\times 0.456 =$		6.2 ¹⁰ / ₉
			marked			

"B" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-20-06	14	7	804+50	833+00	14	Center Pull
			2850' X	0.659 =		1878'
			Sta 804+50 + 1878 =			Sta 823+28
			14' X	0.712 =	10' O/S	
			marked			

- "B" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR:
HIGHWAY:
ROADWAY INSPECTOR:

Young Contractors, Inc.
SH 6, Corridor # 1 & 2
David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
12-12	14	Z	1220+10	1208+00	12	outside shld NB
12-12	14	Z	723+00	732+40	12	outside Ln NB
12-13	14	Z	732+40	735+00	12	outside Ln NB
12-13	14	Z	723+00	731+70	12	outside shld NB
			1210			
			940			
			260			
			870			
			$3280 \times 0.818 =$			2683'
			$2683 - 2410 =$			273'
			$Sta 723+00 + 273 =$			Sta 725+73
			$12 \times 0.431 =$			5.2' 0/s

-B" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
11-11	14	1	861+60	860+20	13	LTL NB
11-11	14	1	815+00	813+40	13	LTL NB
11-11	14	1	796+15	794+00	13	LTL NB
12-12	14	1	1222+00	1208+00	12.5	outside Lw NB
12-12	14	1	1222+00	1220+10	12	outside Shld NB
			140			
			160			
			215			
			1400			
			190			
			2105'			
			2105' x 0.821 = 1728'			
			1728 - 140 - 160 - 215 = 1213'			
			Sta 1222+00 - 1213 = Sta 1209+87			
			12.5x	0.541 =	6.8' o/s	
			Marked			

SURFACE COURSE

1/0/1900 Joe Sustaita

LOT #		2		3000		Tons		"C"	MIX	
LOCATION	STA	STA	LENGTH	WIDTH	SY	Tons	RATE			
SL-1										
5/17/2005										
NB IS pull	82595	85360	2765	13.5	4147.50					
NB Mid pull	76800	77860	1060	14	1648.89					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			3825		5796.39	0	0.00			
SL-2										
5*-17-18-05										
NB Mid pull	75150	76800	1650	14	2566.67					
NB Mid pull	73645	75150	1505	14	2341.11					
NB OS pull	76800	77860	1060	12.5	1472.22					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			4215		6380.00	0	0.00			
SL-3										
5/18/2005										
NB OS pull	73650	76800	3150	12.5	4375.00					
NB IS pull	76400	77860	1460	13.5	2190.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
	0	0	0	0	0.00					
			4610		6565.00		0.000			
SL-4										
5-18-19-05										
NB IS pull	74750	76400	1650	13.5	2475.00					
NB IS pull	73750	74750	1000	13.5	1500.00					
LTL	76940	77730	790	11.5	1009.44					
LTL	74400	75030	630	11.5	805.00					
LTL	81875	82115	240	11.5	306.67					
			4310		6096.11		0.000			
SL#	Length	RDN. #	Length	Width	RDN. #	Station	Location	Width	Core A	Core B
			Offset			Number	ID	Offset	Thickness	Thickness
#1	3825	0.385	1472.6	13.5	0.535	840+68	Inside	7.2		
#2	4215	0.565	2381.5	14	0.123	743+76	Middle	1.7		
#3	4610	0.313	1442.9	12.5	0.547	753+57	Outside	6.8		
#4	4310	0.21	905.1	13.5	0.331	754+95	Inside	4.5		
prog. by W. Anderson, March 16, 1999						SUBLOT 1	NB Inside Pull			
						SUBLOT 2	NB Middle Pull			
						SUBLOT 3	NB Outside Pull			
						SUBLOT 4	NB Inside Pull			

"C" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-13	3	4	1095+00	1062+50	14	Middle Lns NB
9-14	3	4	1206+90	1196+20	13	outside Lnd Shld NB
			3250 1070			
			4320'			
			$4320' \times 0.604 = 2609'$			
			Sta 1095+00 - 2609' =	Sta 1068+91		
			4' x 0.701 =	9.8' $\frac{0}{5}$		
			Marked			

-C¹¹ Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR:
HIGHWAY:
ROADWAY INSPECTOR:

Young Contractors, Inc.
SH 6, Corridor # 1 & 2
David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-12-05	3	Z	1175+80	1149+90	14	Middle Lanes NB
9-13-05	3	Z	1149+90	1134+20	14	Middle Lanes NB

2590
1570

4160'

$4160 \times 0.315 = 1310'$

Sta 1175+80 - 1310' = STA 1162+70

$14 \times 0.329 = 4.6' \text{ o/s}$

Marked

HMAC

ROADWAY RANDOM NUMBERS

"C" Mix

3000 Ton Lot
4 sublots per Lot
Sublots 750 Ton

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
5-19	3	1	818+75	815+00	11.5	LTL
5-19	3	1	802+20	796+30	11.5	LTL
9-12-05	3	1	1206+90	1175+80	14	Middle Lns NB
	375					
	540					
	<u>3110</u>					
	4075	x	0.616	=	2510'	
	2510	-	375	-	540	< 1545'
	Sta		1206+90	-	1545'	= Sta 1191+45
	14'	x	0.783	=	11.0'	O/S

marked

"C" Mix

HMAC

ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR:
HIGHWAY:
ROADWAY INSPECTOR:

Young Contractors, Inc.
SH 6, Corridor # 1 & 2
David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-14	4	3	1116+40	1099+00	13	Outside Ln & Shld NB
9-15	4	3	1206+90	1184+70	13.5	Inside Ln & Shld NB
			1740'			
			<u>2220</u>			
			3960' x 0.592 =			2344'
			2344' - 1740' =			604'
			Sta 1206+90-604'			Sta 1200+86
			13.5 x 0.295 =			4.0%
			Marked			

11" C⁴ Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-14	4	2	1157+20	1116+40	13	outside L ₂ & Shld NB
						$4080 \times 0.409 = 1669'$
						$\text{Sta } 1157+20 - 1669 = \text{Sta } 1140+51$
						$13' \times 0.703 = 9.1' \text{ o/s}$
			marked			

1" C" MIX

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR: Young Contractors, Inc.
HIGHWAY: SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-14	4	1	1196+20	1157+20	13	Outside Lw & Shld NB
			$3900' \times 0.344 =$		1342'	
			Sta 1196+20 - 1342 =			Sta 1182+78
			$13' \times 0.526 =$			6.8' O/S
			Marked			

"C" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR:
HIGHWAY:
ROADWAY INSPECTOR:

Young Contractors, Inc.
SH 6, Corridor # 1 & 2
David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-19	5	4	1032+00	1023+80	13	outside Lnd Shld NB
9-19	5	4	1062+50	1028+80	14	Middle Lws NB
9-20	5	4	1103+20	1099+60	13.5	Inside Lnd Shld NB
		820				
		3370				
		<u>360</u>				
		4550'	$\times 0.489 = 2225'$			
		2225'	$- 820 = 1405'$			
		Sta 1062+50	$- 1405' =$	Sta 1048+45		
		14'	$\times 0.309 =$	4.3'	0/s	

Mailed

7" C mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR:
HIGHWAY:
ROADWAY INSPECTOR:

Young Contractors, Inc.
SH 6, Corridor # 1 & 2
David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-19	5	3	1071+60	1032+00	13	outside Lwt Shld WB
			$3960 \times 0.756 =$			2994'
			Sta 1071+60 -	Sta 1041+66		
			$13' \times 0.351 =$		4.6'	o/s
			Marked			

"C" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-15	5	2	1126+50	1103+20	13.5	Inside Lnd Shld NB
9-19	5	2	1099+00	1071+60	13	outside Lnd Shld NB
			2320			
			<u>2740</u>			
			5060			
			5060 x 0.220 =		1113'	
			Sta 1126+50 - 1113 =		Sta 1115+37	
			13.5 x 0.327 =		4.4 0/5	
			marked			

1/2" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-21	6	3	1058+77	1054+50	12	LTL
10-13	6	3	1028+70	1001+00	14	Middle Lanes NB
			427			
			<u>2770</u>			
			$3197 \times 0.762 =$	2436'		
			$2436' - 427 =$	2009'		
		Sta	$1028+70 - 2009 =$	(Sta 1008+61)		
			$14' \times 0.583 =$	(8.1' @ 5)		
			Marked			

C¹ Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-20	6	2	1054+60	1043+00	13.5	Inside Lmt Skid UB
9-21	6	2	1180+75	1186+60	12	LTL
9-21	6	2	1159+74	1165+59	12	LTL
9-21	6	2	1133+02	1138+87	12	LTL
9-21	6	2	1106+87	1101+02	12	LTL
9-21	6	2	1075+12	1069+27	12	LTL
			1160			
			585			
			585			
			585			
			585			
			585			
			4085			
			$4085 \times 0.851 = 3476'$			
			$3476 - 2915 = 561'$			
			Sta 1106+87 - 561 = Sta 1101+26			
			$12' \times 0.251 = 3.0' \text{ o/s}$			
			Marked			

1" C" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
9-20	6	1	1099+60	1054+60	13.5	Inside L&Shld NB
			4500'	$\times 0.331 =$	1490'	
			Sta 1099+60 - 1490'			Sta 1084+70
			13.5 $\times 0.661 =$		8.9' %	
			marked			

"C" MIX

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-14	7	4	1010+20	996+00	13.5	outside Ln + Shld UB
10-25	7	4	996+00	976+80	13.5	outside Ln + Shld UB
			1420'			
			1920			
			3340'	$\times 0.372 = 1242'$		
			Sta 1010+20 - 1242 =	Sta 997+78		
			$13.5 + 0.542 =$	7.3' 0/5		
			marked			

C" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-14	7	3	881+50	853+75	14	Middle Lns NB
10-14	7	3	1028+80	1010+20	13.5	outside Ln + Shld NB
			2775			
			<u>1860</u>			
			4635	x 0.579 =	2683	
		Sta	881+50 - 2683 =			Sta 854+67
			14' x	0.826 =	11.5' o/s	
			Marked			

- "C" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR:
HIGHWAY:
ROADWAY INSPECTOR:

Young Contractors, Inc.
SH 6, Corridor # 1 & 2
David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-14	7	2	917+80	881+50	14	Middle Lns NB
			3630	x 0.329 =		1194'
			Sta 917+80 - 1194'			(Sta 905+86)
			14' x	0.748 =		(10.4' / S)
			Marked			

HMAC

3" C" mix

ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR: Young Contractors, Inc.
HIGHWAY: SH 6, Corridor # 1 & 2
ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
11-9	8	4	1029+00	987+10	13.5	Inside L & D Shld UB
			4190	x 0.479 =		2007'
			Sta 1029+00 - 2007 =			Sta 1008+93
			13.5 x	0.733 =		9.9' %
			Marked			

"E" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
 CONTROL: 0049-02-009

CONTRACTOR: Young Contractors, Inc.
 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-27	8	3	887+60	853+80	13.5'	Outside Lane & Shld. NB.
11-9	8	3	1043+00	1029+00	13.5	Inside Lnd Shld NB
			3380			
			<u>1400</u>			
			$4780 \times 0.505 = 2414'$			
			$Sta. 887+60 - 2414 = 863+46$			863+46
			$13.5 \times 0.225 =$			3.0 %
			marked			

in C mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)

CONTRACTOR: Young Contractors, Inc.

CONTROL: 0049-02-009

HIGHWAY: SH 6, Corridor # 1 & 2

ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
10-25	8	1	976+80	968+50	13.5	outside L & Shld NB
10-26	8	1	968+50	940+15	13.5	outside L & Shld NB
10-27	8	1	940+15	933+00	13.5	outside L & Shld NB
			830'			
			2835			
			715			
			4380'	$\times 0.825 =$		3614'
			3614' - 830' =			2784'
			Sta 968+50 - 2784 =			Sta 940+66
			13.5' \times 0.555 =			7.4' %
			Marked			

"C" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
11-10	9	4	874+20	864+20	13.5	Inside Lwd Shld NB
11-11	9	4	864+20	854+00	13.5	Inside Lwd Shld NB
11-11	9	4	919+00	912+05	12	LTL
11-14	9	4	934+20	927+70	12	LTL
11-14	9	4	956+00	963+50	12	LTL
			1000			
			1020			
			695			
			650			
			<u>750</u>			
			4115' x	0.356 =	1465'	
			1465 - 1000 =	465'		
			Sta 864+20 - 465 =		Sta 859+55	Inside Lwd Shld
			13.5 x	683 =	9.2' o/s	
			Marked			

-1" C" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261)
CONTROL: 0049-02-009

CONTRACTOR:
HIGHWAY:
ROADWAY INSPECTOR:

Young Contractors, Inc.
SH 6, Corridor # 1 & 2
David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
11-10	9	2	954+40	912+80	13.5	Inside L & Shld NB
			4160 x	0.763 =		3174'
			Sta 954+40-	3174 =		<u>Sta 922+66</u>
			13.5 x	0.564 =		<u>7.6' %/s</u>
			marked			

~ C" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
11-9	9	1	987+10	966+10	13.5	Inside End Shld NB
11-10	9	1	966+10	954+40	13.5	Inside End Shld NB
			2100'			
			<u>1170</u>			
			3270	$\times 0.484$	= 1583'	
			Sta 987+10	- 1583'	=	Sta 971+27
			13.5	$\times 0.857$	=	11.6' o/s
			marked			

C" A/A

HMAC ROADWAY RANDOM NUMBERS

PROJECT: <u>NH 2004(261)</u>	CONTRACTOR: <u>Young Contractors, Inc.</u>
CONTROL: <u>0049-02-009</u>	HIGHWAY: <u>SH 6, Corridor # 1 & 2</u>
	ROADWAY INSPECTOR: <u>David Beard</u>

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
12-16	10	3	723+00	730+00	12.5	outside shld NB
12-21	10	3	730+00	735+00	12.5	outside shld NB
12-27	10	3	1222+00	1210+00	14	outside Ln NB
			700			
			500			
			<u>1200</u>			
			$2400 \times 0.641 = 1538'$			
			$1538' - 1200' = 338'$			
			Sta 1222+00 - 338 = Sta 1218+62			
			$14' \times 0.490 = 5.6' O/S$			
			Marked			

"C" mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
11-22	10	Z	Inter sections			No Cores
12-13	10	Z	734+00	742+50	20	Detour # 1
12-14	10	Z	723+00	735+00	12	Outside Lw NB
			850 1200			
			2050	x 0.608 =		1246'
			1246' -	850' =	396'	
		Sta	723+00	+ 396 =	Sta 726+96	
			12' x	0.694 =	8.3' %	
			mald			

"C" Mix

HMAC ROADWAY RANDOM NUMBERS

PROJECT: NH 2004(261) CONTRACTOR: Young Contractors, Inc.
 CONTROL: 0049-02-009 HIGHWAY: SH 6, Corridor # 1 & 2
 ROADWAY INSPECTOR: David Beard

DATE	LOT	SUBLOT	STATION	STATION	PAVING WIDTH	LOCATION
11-16	10	1	1043+00	1036+00	12	LTL
11-16	10	1	1024+10	1016+20	12	LTL
11-16	10	1	1001+90	996+20	12	LTL
11-17	10	1	996+20	993+90	12	LTL
11-17	10	1	982+75	975+00	12	LTL
11-17	10	1	891+50	885+60	12	LTL
11-21	10	1	885+60	883+15	12	LTL
11-21	10	1	868+30	860+20	12	LTL
11-21	10	1	815+00	813+00	12	LTL
11-21	10	1	796+50	794+00	12	LTL
			700			<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;">Marked</div>
			790			
			570			
			230			
			775			
			590			
			245			
			810			
			200			
			<u>250</u>			
			5160 x 0.302 =	1558'		
			1558 - 1490 = 68'			
			Sta 1001+90 - 68 =	Sta 1001+22		
			12' x 0.726 =	8.7' 0/5		