

FROST EFFECT ON ROADBEDS

WEXFORD COUNTY 2011-2012

MONTH	DATE	HIGH TEMP, °F	LOW TEMP, °F	AVERAGE TEMP, °F	FREEZE INDEX, °F-DAY	SUM F-INDEX, °F-DAY	THAW INDEX, °F-DAY	SUM T-INDEX, °F-DAY
DEC.	1	40	25	32	0	0		
	2	35	20	28	4	4		
	3	42	28	35	-3	1		
	4	47	32	40	-8	-7		
	5	33	27	30	2	-5		
	6	27	23	25	7	2		
	7	31	21	26	6	8		
	8	30	20	25	7	15		
	9	24	16	20	12	27		
	10	25	14	20	12	39		
	11	44	25	34	-2	37		
	12	43	32	38	-6	31		
	13	40	32	36	-4	27		
	14	48	30	39	-7	20		
	15	50	28	39	-7	13		
	16	29	21	25	7	20		
	17	28	16	22	10	30		
	18	35	25	30	2	32		
	19	37	28	32	0	32		
	20	30	10	20	12	44		
	21	35	30	32	0	44		
	22	35	21	28	4	48		
	23	28	18	23	9	57		
	24	32	23	28	4	61		
	25	35	30	32	0	61		
	26	41	30	36	-4	57		
	27	37	20	28	4	61		
	28	20	13	16	16	77		
	29	30	20	25	7	84		
	30	35	30	32	0	84		
	31	35	30	32	0	84		
JAN.	1	35	25	30	2	86		
	2	25	15	20	12	98		
	3	18	12	15	17	115		
	4	30	4	17	15	130		
	5	37	12	24	8	138		
	6	44	35	40	-8	130		
	7	35	24	30	2	132		
	8	35	9	22	10	142		
	9	38	22	30	2	144		
	10	41	20	30	2	146		
	11	50	22	36	-4	142		
	12	33	22	28	4	146		
	13	28	15	22	10	156		
	14	15	-1	7	25	181		
	15	21	1	11	21	202		
	16	35	17	26	6	208		
	17	32	15	24	8	216		
	18	18	14	16	16	232		
	19	21	5	13	19	251		
	20	12	1	6	26	277		
	21	19	-7	6	26	303		
	22	30	12	21	11	314		
	23	41	28	34	-2	312		
	24	28	24	26	6	318		
	25	30	20	25	7	325		
	26	32	21	26	6	331		
	27	35	28	32	0	331		
	28	32	22	27	5	336		
	29	25	12	18	14	350		
	30	23	0	12	20	370		
	31	46	15	30	2	372		
FEB.	1	40	30	35	-3	369		
	2	37	30	34	-2	367		
	3	35	22	28	4	371		
	4	40	12	26	6	377		
	5	35	22	28	4	381		
	6	37	28	32	0	381		
	7	31	9	20	12	393		
	8	35	2	18	14	407		
	9	37	15	26	6	413		
	10	28	9	18	14	427		
	11	17	2	10	22	449		
	12	28	17	22	10	459		
	13	32	17	24	8	467		
	14	30	24	27	5	472		
	15	35	30	32	0	472		
	16	35	23	29	3	475		
	17	37	17	27	5	480		
	18	30	9	20	12	492		
	19	37	1	19	13	505		
	20	37	7	22	10	515		
	21	35	25	30	2	517	1 1	
	22	37	22	30	2	519	1 2	
	23	35	17	26	6	525	-3 0	Could put on here but since freezing index forecast to increase don't per pg 9 of "FHWA Guidelines for Spring Highway Use Restrictions"
	24	30	25	28	4	529	-1 0	
	25	26	15	20	12	541	-9 0	
	26	32	12	22	10	551	-7 0	
	27	37	19	28	4	555	-1 0	
	28	35	9	22	10	565	-7 0	
	29	32	30	31	1	566	2 2	
MARCH	1	37	30	34	-2	564	5 5	
	2	35	30	32	0	564	3 8	
	3	31	20	26	6	570	-3 5	Restrictions Should go on _____ on based on forecasted weather forecasted a week out- The sunny days we were getting pavement temps of 50-70 degrees as well.
	4	22	7	14	18	588	-15 0	
	5	23	-4	10	22	610	-19 0	
	6	50	20	35	-3	607	6 6	
	7	55	47	51	-19	588	22 28	Thin pavements Should level is 10 the must level is 40
	8	51	24	38	-6	582	9 37	Thick Pavements Should level is 25 the must level is 50
	9	29	7	18	14	596	-11 26	
	10	45	9	27	5	601	-2 24	
	11	62	36	49	-17	584	20 44	
	12	51	36	44	-12	572	15 59	
	13	56	31	44	-12	560	15 74	
	14	78	28	53	-21	539	24 98	
	15	76	41	58	-26	513	29 127	
	16	76	33	54	-22	491	25 152	
	17	78	41	60	-28	463	31 183	
	18	78	43	60	-28	435	31 214	
	19	78	48	63	-31	404	34 248	
	20	82	58	70	-38	366	41 289	
	21	84	56	70	-38	328	41 330	
	22	76	51	64	-32	296	35 365	
	23	61	51	56	-24	272	27 392	
	24	56	51	54	-22	250	25 417	
	25	53	31	42	-10	240	13 430	
	26	44	23	34	-2	238	5 435	
	27	58	28	43	-11	227	14 449	
	28	59	36	48	-16	211	19 468	
	29	42	31	36	-4	207	7 475	
	30	33	31	32	0	207	3 478	
	31	44	31	38	-6	201	9 487	
APRIL	1	53	33	43	-11	200	14 501	SUM OF DAILY FREEZING INDEX = 30% OF SUM 610 183
	2	56	31	44	-12	188	15 516	
	3	58	36	47	-15	173	18 534	
	4	51	24	38	-6	167	9 543	SUM OF THAWING INDEX REACHES 183 THEREFORE RELEASE RESTRICTIONS AT 30% OF MAXIMUM SUM OF FREEZING INDEX
	5	50	26	38	-6	161	9 552	
	6	58	19	38	-6	155	9 561	
	7	63	21	42	-10	145	13 574	
	8	56	31	44	-12	133	15 589	
	9	56	24	40	-8	125	11 600	
	10	40	31	36	-4	121	7 607	
	11	49	28	38	-6	115	9 616	
	12	56	21	38	-6	109	9 625	
	13	61	22	42	-10	99	13 638	
	14	71	51	61	-29	70	32 670	
	15	71	56	64	-32	38	35 705	
	16	64	33	48	-16	22	19 724	
	17	51	28	40	-8	14	11 735	
	18	61	24	42	-10	4	13 748	
	19	58	38	48	-16	-12	19 767	
	20	41	36	38	-6	-18	9 776	
	21	51	28	40	-8	-26	11 787	
	22	55	21	38	-6	-32	9 796	
	23	52	31	42	-10	-42	13 809	
	24	56	31	44	-12	-54	15 824	
	25	58	24	41	-9	-63	12 836	
	26	48	31	40	-8	-71	11 847	Remove Restrictions 2012 on _____
	27	51	22	36	-4	-75	7 854	
	28	51	28	40	-8	-83	11 865	
	29	64	21	42	-10	-93	13 878	AT 30% OF MAXIMUM SUM OF FREEZING INDEX based on forecasted and estimated data
	30	51	39	45	-13	-106	16 894	

FROST EFFECT ON ROADBEDS

WEXFORD COUNTY 2012-2013

MONTH	DATE	HIGH TEMP, °F	LOW TEMP, °F	AVERAGE TEMP, °F	FREEZE INDEX, °F-DAY	SUM F-INDEX, °F-DAY	THAW INDEX, °F-DAY	SUM T-INDEX, °F-DAY
DEC.	1	48	31	40		0		
	2	51	39	45		0		
	3	62	39	50		0		
	4	59	27	43		0		
	5	33	24	28	4	4		
	6	39	29	34	-2	2		
	7	41	32	36	-4	-2		
	8	34	25	30	2	0		
	9	31	23	27	5	5		
	10	31	20	26	6	11		
	11	31	18	24	8	19		
	12	39	21	30	2	21		
	13	42	31	36	-4	17		
	14	39	19	29	3	20		
	15	36	31	34	-2	18		
	16	42	36	39	-7	11		
	17	39	23	31	1	12		
	18	37	25	31	1	13		
	19	36	30	33	-1	12		
	20	36	32	34	-2	10		
	21	34	27	30	2	12		
	22	31	21	26	6	18		
	23	29	17	23	9	27		
	24	24	21	22	10	37		
	25	27	19	23	9	46		
	26	24	19	22	10	56		
	27	26	11	18	14	70		
	28	29	9	19	13	83		
	29	27	19	23	9	92		
	30	26	21	24	8	100		
	31	31	18	24	8	108		
JAN.	1	21	16	18	14	114		
	2	23	17	20	12	126		
	3	26	21	24	8	134		
	4	26	19	22	10	144		
	5	35	6	20	12	156		
	6	34	25	30	2	158		
	7	36	21	28	4	162		
	8	37	30	34	-2	160		
	9	39	31	35	-3	157		
	10	40	18	29	3	160		
	11	44	34	39	-7	153		
	12	51	34	42	-10	143		
	13	34	19	26	6	149		
	14	21	14	18	14	163		
	15	24	13	18	14	177		
	16	29	16	22	10	187		
	17	25	13	19	13	200		
	18	36	-3	16	16	216		
	19	37	30	34	-2	214		
	20	30	9	20	12	226		
	21	9	-2	4	28	254		
	22	4	-9	-2	34	288		
	23	14	-1	6	26	314		
	24	11	-6	2	30	344		
	25	19	11	15	17	361		
	26	26	9	18	14	375		
	27	29	11	20	12	387		
	28	36	26	31	1	388		
	29	49	32	40	-8	380		
	30	41	22	32	0	380		
	31	22	14	18	14	394		
FEB.	1	14	9	12	20	414		
	2	16	-1	8	24	438		
	3	16	0	8	24	462		
	4	19	-7	6	26	488		
	5	24	-9	8	24	512		
	6	26	-4	11	21	533		
	7	28	24	26	6	539		
	8	28	-1	14	18	557		
	9	29	-9	10	22	579		
	10	37	11	24	8	587		
	11	41	29	35	-3	584		
	12	29	21	25	7	591		
	13	36	22	29	3	594		
	14	36	21	28	4	598		
	15	22	12	17	15	613		
	16	22	-5	8	24	637		
	17	21	-15	3	29	666		
	18	41	16	28	4	670		
	19	41	13	27	5	675		
	20	19	13	16	16	691		
	21	24	16	20	12	703	-9 0	
	22	26	16	21	11	714	-8 0	
	23	29	24	26	6	720	-3 0	
	24	34	25	30	2	722	1 1	
	25	32	11	22	10	732	-7 0	
	26	36	19	28	4	736	-1 0	
	27	36	31	34	-2	734	5 5	
	28	31	24	28	4	738	-1 4	
MARCH	1	25	16	16	16	754	-13 0	
	2	23	5	14	18	772	-15 0	
	3	24	1	12	20	792	-17 0	
	4	32	3	17.5	14.5	806.5	-11.5 0	
	5	34	13	23.5	8.5	815	-5.5 0	
	6	39	26	32.5	-0.5	814.5	3.5 3.5	
	7	31	12	21.5	10.5	825	-7.5 0	
	8	39	3	21	11	836	-8 0	
	9	39	19	29	3	839	0 0	
	10	42	36	39	-7	832	10 10	
	11	44	31	37.5	-5.5	826.5	8.5 18.5	
	12	31	23	27	5	831.5	-2 16.5	
	13	29	19	24	8	839.5	-5 11.5	
	14	36	11	23.5	8.5	848	-5.5 6	
	15	34	24	29	3	851	0 6	
	16	25	14	19.5	12.5	863.5	-9.5 0	
	17	26	16	21	11	874.5	-8 0	
	18	31	16	23.5	8.5	883	-5.5 0	
	19	31	19	25	7	890	-4 0	
	20	23	14	18.5	13.5	903.5	-10.5 0	
	21	28	16	22	10	913.5	-7 0	
	22	31	21	26	6	919.5	-3 0	
	23	33	24	28.5	3.5	923	-0.5 0	
	24	36	20	28	4	927	-1 0	
	25	34	23	28.5	3.5	930.5	-0.5 0	
	26	37	31	34	-2	928.5	5 5	
	27	40	29	34.5	-2.5	926	5.5 10.5	
	28	44	25	34.5	-2.5	923.5	5.5 16	
	29	44	19	31.5	0.5	924	2.5 18.5	
	30	50	17	33.5	-1.5	922.5	4.5 23	
	31	41	26	33.5	-1.5	921	4.5 27.5	
APRIL	1	30	19	24.5	7.5	928.5	-4.5 23	
	2	34	14	24	8	936.5	-5 18	
	3	39	14	26.5	5.5	942	-2.5 15.5	
	4	52	25	38.5	-6.5	935.5	9.5 25	
	5	39	27	33	-1	934.5	4 29	
	6	49	29	39	-7	927.5	10 39	
	7	49	29	39	-7	920.5	10 49	
	8	40	29	34.5	-2.5	918	5.5 54.5	
	9	41	34	37.5	-5.5	912.5	8.5 63	
	10	41	34	37.5	-5.5	907	8.5 71.5	
	11	36	31	33.5	-1.5	905.5	4.5 76	
	12	36	31	33.5	-1.5	904	4.5 80.5	
	13	36	31	33.5	-1.5	902.5	4.5 85	
	14	41	22	31.5	0.5	903	2.5 87.5	
	15	56	36	46	-14	889	17 104.5	
	16	49	31	40	-8	881	11 115.5	
	17	50	26	38	-6	875	9 124.5	
	18	59	39	49	-17	858	20 144.5	
	19	58	29	43.5	-11.5	846.5	14.5 159	
	20	36	21	28.5	3.5	850	-0.5 158.5	
	21	48	16	32	0	850	3 161.5	
	22	63	36	49.5	-17.5	832.5	20.5 182	
	23	59	32	45.5	-13.5	819	16.5 198.5	
	24	45	31	38	-6	813	9 207.5	
	25	49	31	40	-8	805	11 218.5	
	26	62	24	43	-11	794	14 232.5	
	27	72	41	56.5	-24.5	769.5	27.5 260	
	28	69	36	52.5	-20.5	749	23.5 283.5	
	29	74	41	57.5	-25.5	723.5	28.5 312	
	30	74	56	65	-33	690.5	36 348	

Could put on here but since freezing index forecast to increase don't per pg 9 of "FHWA Guidelines for Spring Highway Use Restrictions"

Restrictions Should go on \_\_\_\_\_ on based on forecasted weather forecasted a week out- The sunny days we were getting pavement temps of 50-70 degrees as well.

**RECOMMEND THAWING INDEX SUM OF 20-25 °F DAYS**  
Thin pavements Should level is 10 the must level is 40  
Thick Pavements Should level is 25 the must level is 50

  =forecasted data  
  = ESTIMATED DATA

SUM OF DAILY FREEZING INDEX = 30% OF SUM  
832 249.6

SUM OF THAWING INDEX REACHES 249.6  
THEREFORE RELEASE RESTRICTIONS  
AT 30% OF MAXIMUM SUM OF FREEZING INDEX



Remove Restrictions 2013 on \_\_\_\_\_

AT 30% OF MAXIMUM SUM OF FREEZING INDEX based on forecasted and estimated data

FROST EFFECT ON ROADBEDS

WEXFORD COUNTY 2013-2014

MONTH	DATE	HIGH TEMP, °F	LOW TEMP, °F	AVERAGE TEMP, °F	FREEZE INDEX, °F-DAY	SUM F-INDEX, °F-DAY	THAW INDEX, °F-DAY	SUM T-INDEX, °F-DAY
	23				19	13	13	
	24				16	16	29	
	25				24	8	37	
	26				25	7	44	
	27				17	15	59	
	28				11	21	80	
	29				16	16	96	
	30				30	2	98	
DEC.	1	35	30	32.5	-0.5	97.5		
	2	33	24	28.5	3.5	101		
	3	31	23	27	5	106		
	4	47	31	39	-7	99		
	5	47	19	33	-1	98		
	6	19	15	17	15	113		
	7	17	8	12.5	19.5	132.5		
	8	19	3	11	21	153.5		
	9	25	8	16.5	15.5	169		
	10	15	6	10.5	21.5	190.5		
	11	13	4	8.5	23.5	214		
	12	18	2	10	22	236		
	13	18	8	13	19	255		
	14	18	6	12	20	275		
	15	18	10	14	18	293		
	16	16	-10	3	29	322		
	17	25	13	19	13	335		
	18	23	19	21	11	346		
	19	29	9	19	13	359		
	20	24	21	22.5	9.5	368.5		
	21	27	23	25	7	375.5		
	22	24	17	20.5	11.5	387		
	23	19	9	14	18	405		
	24	15	3	9	23	428		
	25	21	13	17	15	443		
	26	21	17	19	13	456		
	27	33	4	18.5	13.5	469.5		
	28	41	25	33	-1	468.5		
	29	35	11	23	9	477.5		
	30	11	7	9	23	500.5		
JAN.	31	9	6	7.5	24.5	525		
	1	9	0	4.5	27.5	528		
	2	8	-15	-3.5	35.5	563.5		
	3	12	-17	-2.5	34.5	598		
	4	29	12	20.5	11.5	609.5		
	5	24	11	17.5	14.5	624		
	6	11	-8	1.5	30.5	654.5		
	7	5	-9	-2	34	688.5		
	8	12	5	8.5	23.5	712		
	9	15	4	9.5	22.5	734.5		
	10	37	15	26	6	740.5		
	11	38	29	33.5	-1.5	739		
	12	37	28	32.5	-0.5	738.5		
	13	39	31	35	-3	735.5		
	14	31	20	25.5	6.5	742		
	15	26	15	20.5	11.5	753.5		
	16	23	16	19.5	12.5	766		
	17	25	17	21	11	777		
	18	24	16	20	12	789		
	19	26	17	21.5	10.5	799.5		
	20	19	4	11.5	20.5	820		
	21	8	-10	-1	33	853		
	22	11	2	6.5	25.5	878.5		
	23	9	-7	1	31	909.5		
	24	20	-3	8.5	23.5	933		
	25	25	0	12.5	19.5	952.5		
	26	13	0	6.5	25.5	978		
	27	8	-10	-1	33	1011		
	28	3	-13	-5	37	1048		
	29	15	2	8.5	23.5	1071.5		
	30	27	10	18.5	13.5	1085		
FEB.	31	26	6	16	16	1101		
	1	22	2	12	20	1121		
	2	20	-1	9.5	22.5	1143.5		
	3	18	-7	5.5	26.5	1170		
	4	22	4	13	19	1189		
	5	17	9	13	19	1208		
	6	11	6	8.5	23.5	1231.5		
	7	12	3	7.5	24.5	1256		
	8	18	4	11	21	1277		
	9	19	0	9.5	22.5	1299.5		
	10	11	-1	5	27	1326.5		
	11	15	6	10.5	21.5	1348		
	12	22	12	17	15	1363		
	13	27	18	22.5	9.5	1372.5		
	14	24	1	12.5	19.5	1392		
	15	18	12	15	17	1409		
	16	21	12	16.5	15.5	1424.5		
	17	33	22	27.5	4.5	1429		
	18	34	24	29	3	1432		
	19	41	23	32	0	1432		
	20	41	25	33	-1	1431		
	21	44	24	34	-2	1429	5 5	
	22	33	20	26.5	5.5	1434.5	-2.5 2.5	
	23	32	23	27.5	4.5	1439	-1.5 1	Could put on here but since freezing index forecast to increase don't per pg 9 of "FHWA Guidelines for Spring Highway Use Restrictions"
	24	39	19	29	3	1442	0 1	
	25			22	10	1452	-7 0	
	26			28	4	1456	-1 0	
	27			34	-2	1454	5 5	
	28			28	4	1458	-1 4	
MARCH	1			16	16	1474	-13 0	
	2			14	18	1492	-15 0	
	3			12	20	1512	-17 0	Restrictions Should go on _____ on based on forecasted weather forecasted a week out- The sunny days we were getting pavement temps of 50-70 degrees as well.
	4			0	32	1544	-29 0	
	5			0	32	1576	-29 0	
	6			0	32	1608	-29 0	
	7			0	32	1640	-29 0	
	8			0	32	1672	-29 0	RECOMMEND THAWING INDEX SUM OF 20-25 °F DAYS
	9			0	32	1704	-29 0	Thin pavements Should level is 10 the must level is 40
	10			0	32	1736	-29 0	Thick Pavements Should level is 25 the must level is 50
	11			0	32	1768	-29 0	
	12			0	32	1800	-29 0	
	13			0	32	1832	-29 0	
	14			0	32	1864	-29 0	
	15			0	32	1896	-29 0	
	16			0	32	1928	-29 0	
	17			0	32	1960	-29 0	
	18			0	32	1992	-29 0	
	19			0	32	2024	-29 0	
	20			0	32	2056	-29 0	
	21			0	32	2088	-29 0	
	22			0	32	2120	-29 0	
	23			0	32	2152	-29 0	
	24			0	32	2184	-29 0	
	25			0	32	2216	-29 0	
	26			0	32	2248	-29 0	
	27			0	32	2280	-29 0	
	28			0	32	2312	-29 0	
	29			0	32	2344	-29 0	
	30			0	32	2376	-29 0	
	31			0	32	2408	-29 0	
APRIL	1			32	2440	-29 0		SUM OF DAILY FREEZING INDEX = 1736 30% OF SUM 520.8
	2			32	2472	-29 0		
	3			32	2504	-29 0		
	4			32	2536	-29 0		SUM OF THAWING INDEX REACHES 520.8 THEREFORE RELEASE RESTRICTIONS AT 30% OF MAXIMUM SUM OF FREEZING INDEX
	5			32	2568	-29 0		
	6			32	2600	-29 0		
	7			32	2632	-29 0		
	8			32	2664	-29 0		
	9			32	2696	-29 0		
	10			32	2728	-29 0		
	11			32	2760	-29 0		
	12			32	2792	-29 0		
	13			32	2824	-29 0		
	14			32	2856	-29 0		
	15			32	2888	-29 0		
	16			32	2920	-29 0		
	17			32	2952	-29 0		
	18			32	2984	-29 0		
	19			32	3016	-29 0		
	20			32	3048	-29 0		
	21			32	3080	-29 0		
	22			32	3112	-29 0		
	23			32	3144	-29 0		
	24			32	3176	-29 0		
	25			32	3208	-29 0		
	26			32	3240	-29 0		Remove Restrictions 2013 on _____
	27			32	3272	-29 0		
	28			32	3304	-29 0		
	29			32	3336	-29 0		AT 30% OF MAXIMUM SUM OF FREEZING INDEX based on forecasted and estimated data
	30			32	3368	-29 0		

 = forecasted data  
 = ESTIMATED DATA