

# RIDOT Pavement Preservation Monitoring Program

2000 - 2007

Monitoring of pavement preservation treatments began in 2000 as a result of the Pavement Preservation Program (PPP) moving to a Federal Aid Program that year – one of the requirements being that monitoring be performed as a standard component.

Monitoring – Performed by the Pavement Management Engineer and assisted by an R&T Technician.

- 2 sections of 100' of roadway were chosen randomly [for each treatment], with each lane representing a monitoring **segment** within each **section**.
- Distress assessments were conducted per the LTPP Distress Manual, with some modifications.
- Fall and spring were chosen as the times to inspect each section.
- Photographic records are also maintained.

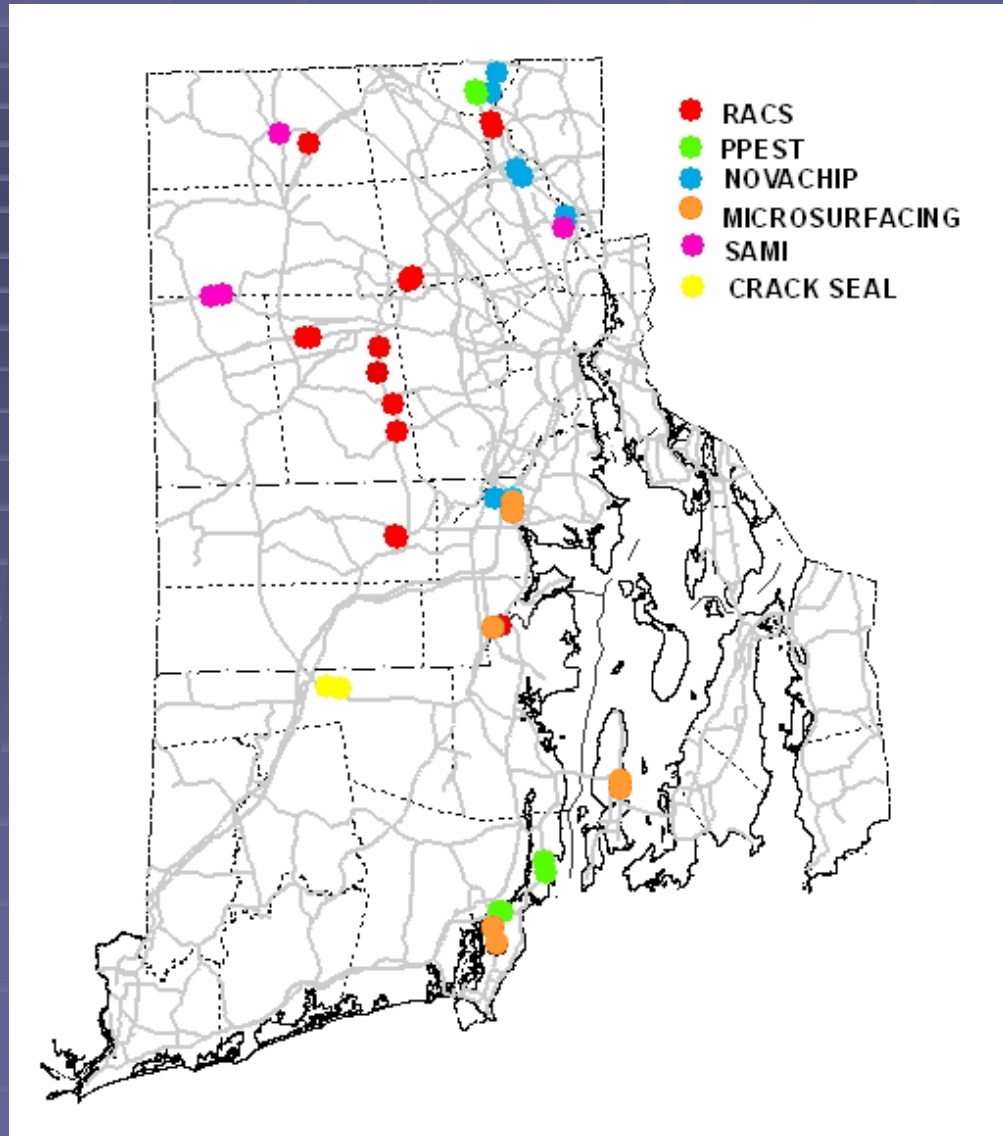
# Data Management

All data is stored in RIDOT's Pavement Management software (dTims CT) for Deighton Associates. It is also entered in Arcview 9.2 for geographic location, graphic display and database manipulation.

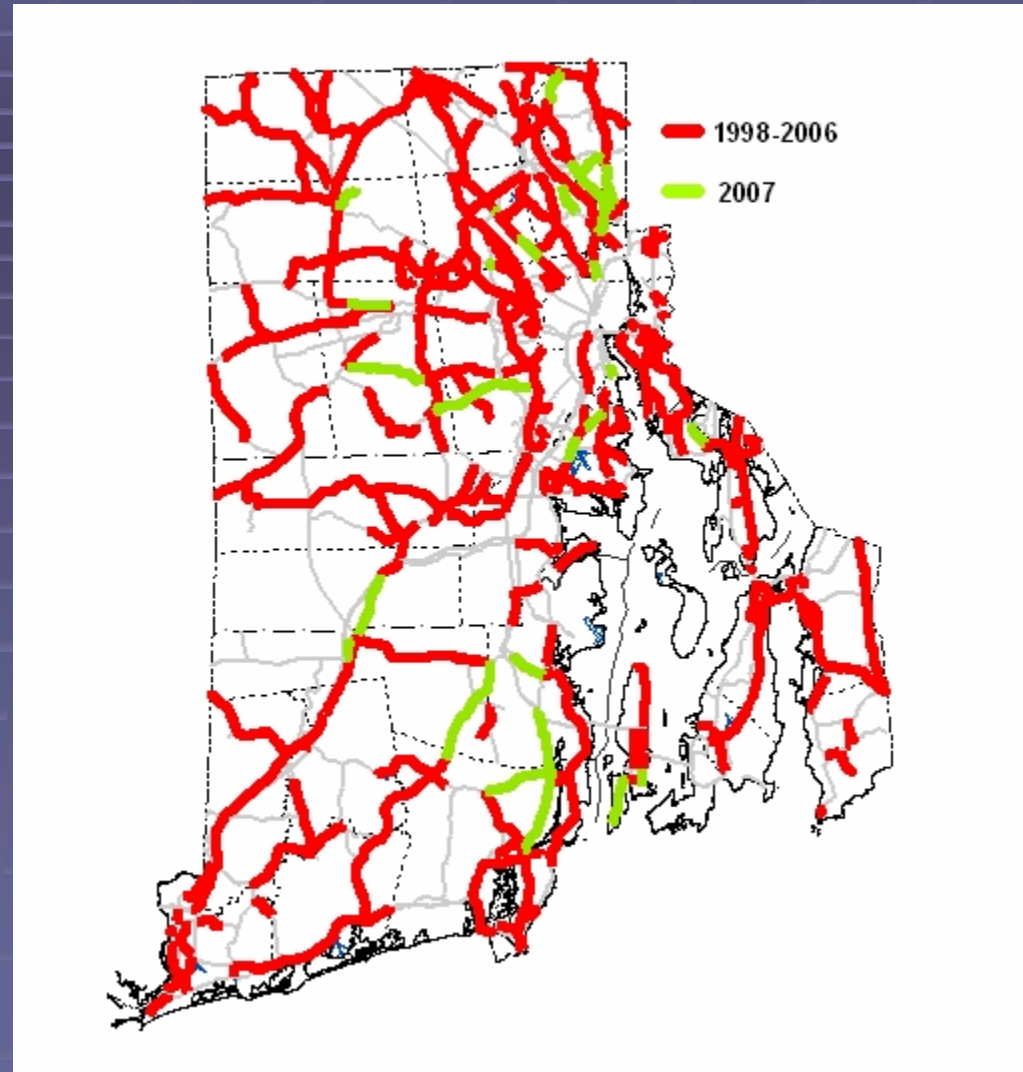
# Monitored Treatments

- Block Crack Sealant (ASTM D 6690)
- CMCRA crack sealant: Chemically Modified Crumb Rubber Asphalt (CMCRA) with fibers
- Microsurfacing
- Rubberized Asphalt Chip Seal (20% RACS) with five different stone/binder combinations
- Novachip
- CMCRA Paver Placed Elastomeric Surface Treatment (PPEST)-Thin Overlay
- CMCRA open graded friction course
- Cape seal – Microsurfacing over 20% RACS
- SAMI 1 – Novachip over 20% RACS
- SAMI 2 – PPEST over 20% RACS

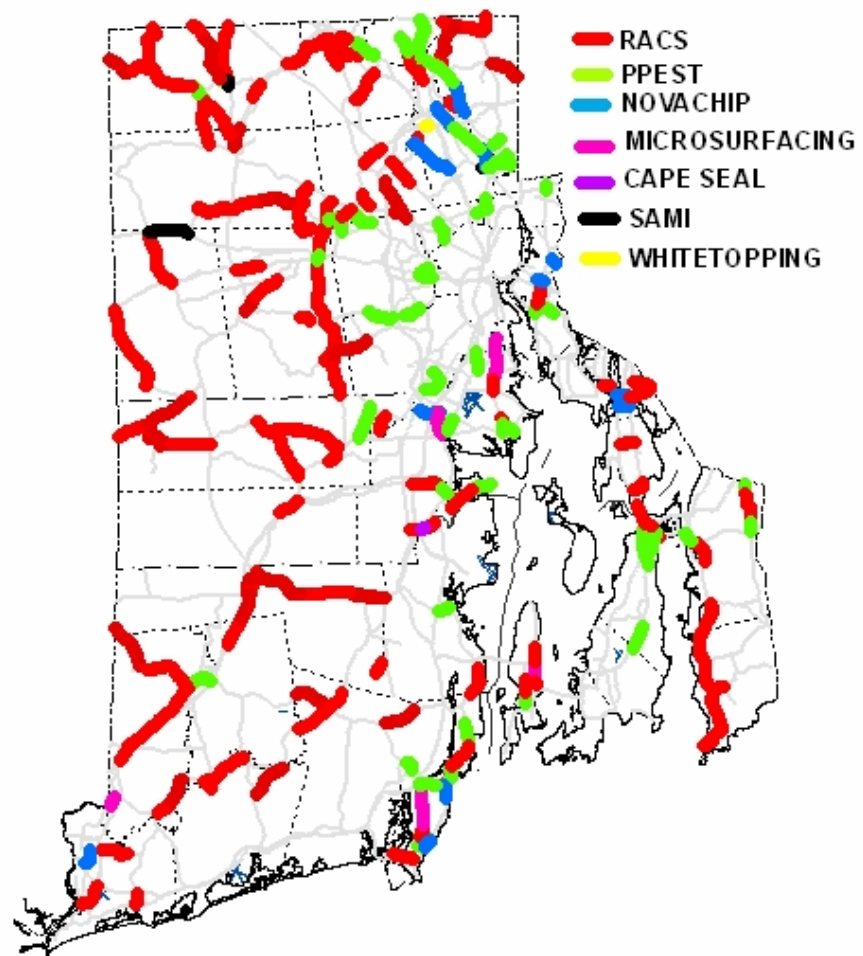
# Monitoring Sections



# Roads Crack Sealed 1998-2007



# Surface Treatments 2000-2007





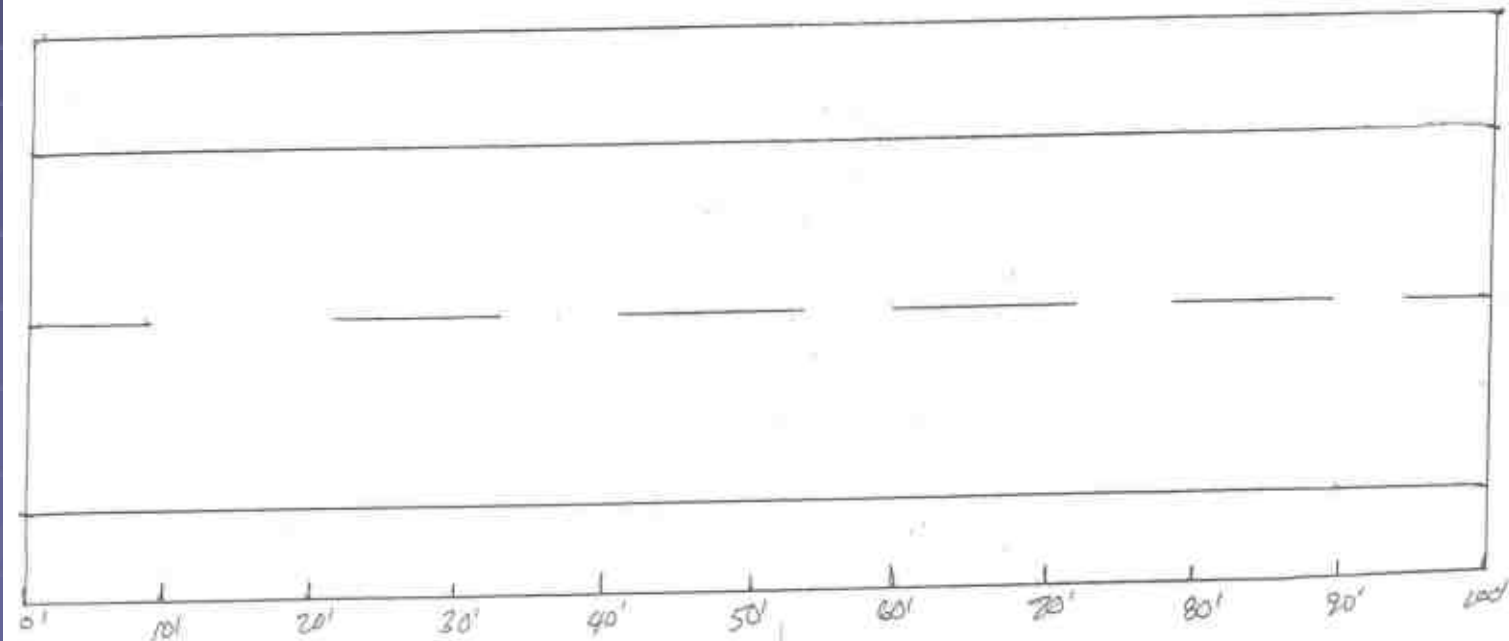
# Distresses/Measurements Monitored

- Joint Opening (Linear feet)
- Longitudinal Cracking (Linear feet)
- Transverse Cracking (Linear feet)
- Edge Cracking (Linear feet)
- Alligator Cracking (Area)
- Block Cracking (Area)
- Reflection Cracking from rigid base (Linear feet)
- Potholes (Number and Area)
- Utility Patches (Number and Area)
- Rutting
- Shoving
- Raveling (Area)
- Bleeding (Area)
- Polished Aggregate (Area)
- Skid Data
- IRI (mm/m)

# Section Crack Map 2000

MONITORING TYPE -  
ROAD -  
TOWN - JAMESTOWN  
SECTION ID -

YEAR PLACED - 2000  
LIMITS -  
REVIEW DATE - FALL 2000



# Section Crack Map 2001

MONITORING TYPE -

YEAR PLACED - 2000

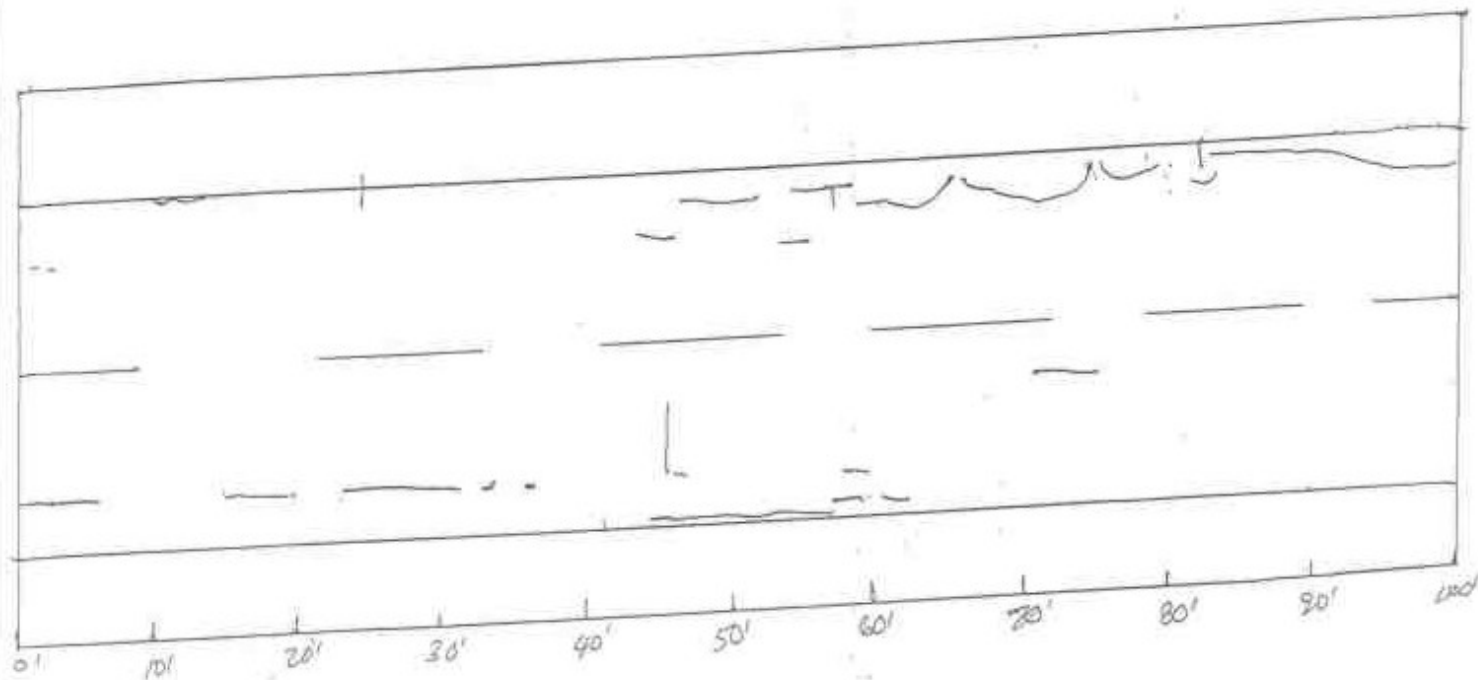
ROAD -

LIMITS -

TOWN - JAMESTOWN

REVIEW DATE - FALL 2001

SECTION ID -



# Section Crack Map 2002

MONITORING TYPE -

YEAR PLACED - 2000

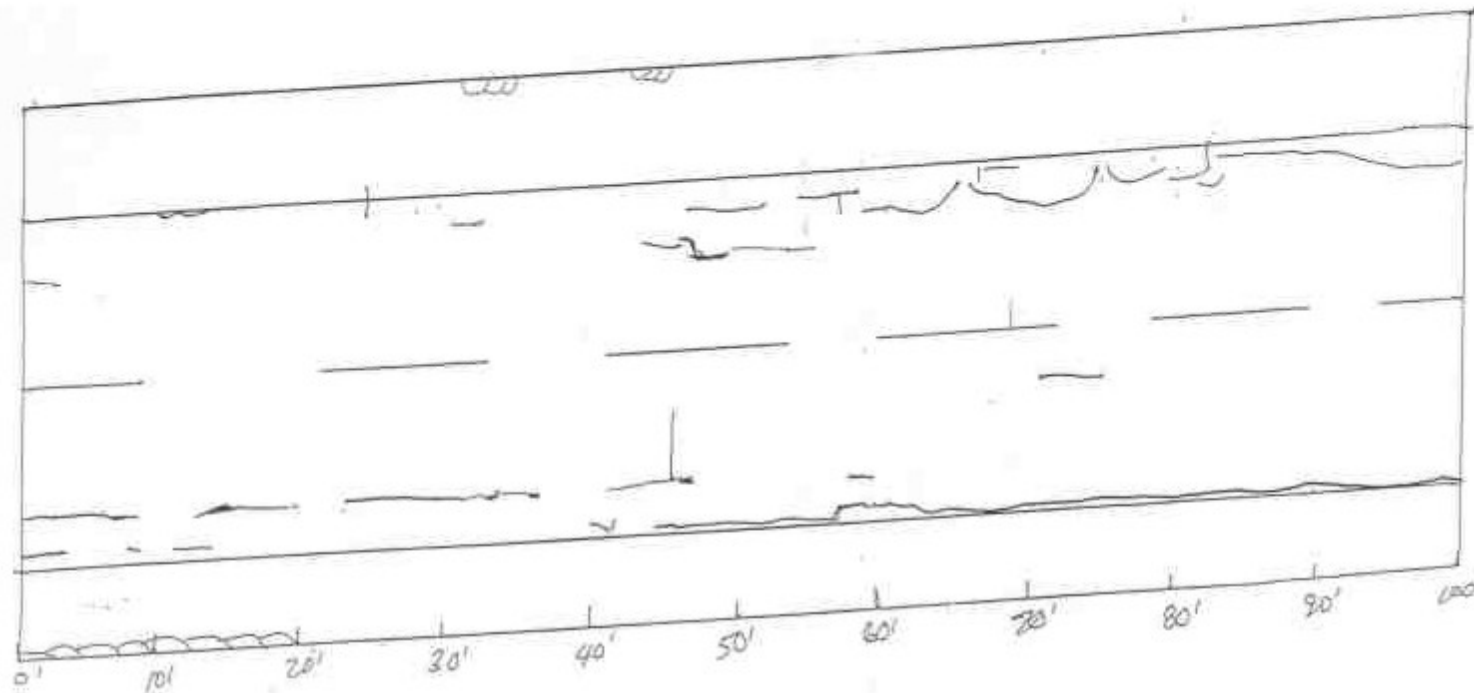
ROAD -

LIMITS -

TOWN - JAMESTOWN

REVIEW DATE - FALL 2002

SECTION ID -



# Section Crack Map 2003

MONITORING TYPE -

YEAR PLACED - 2000

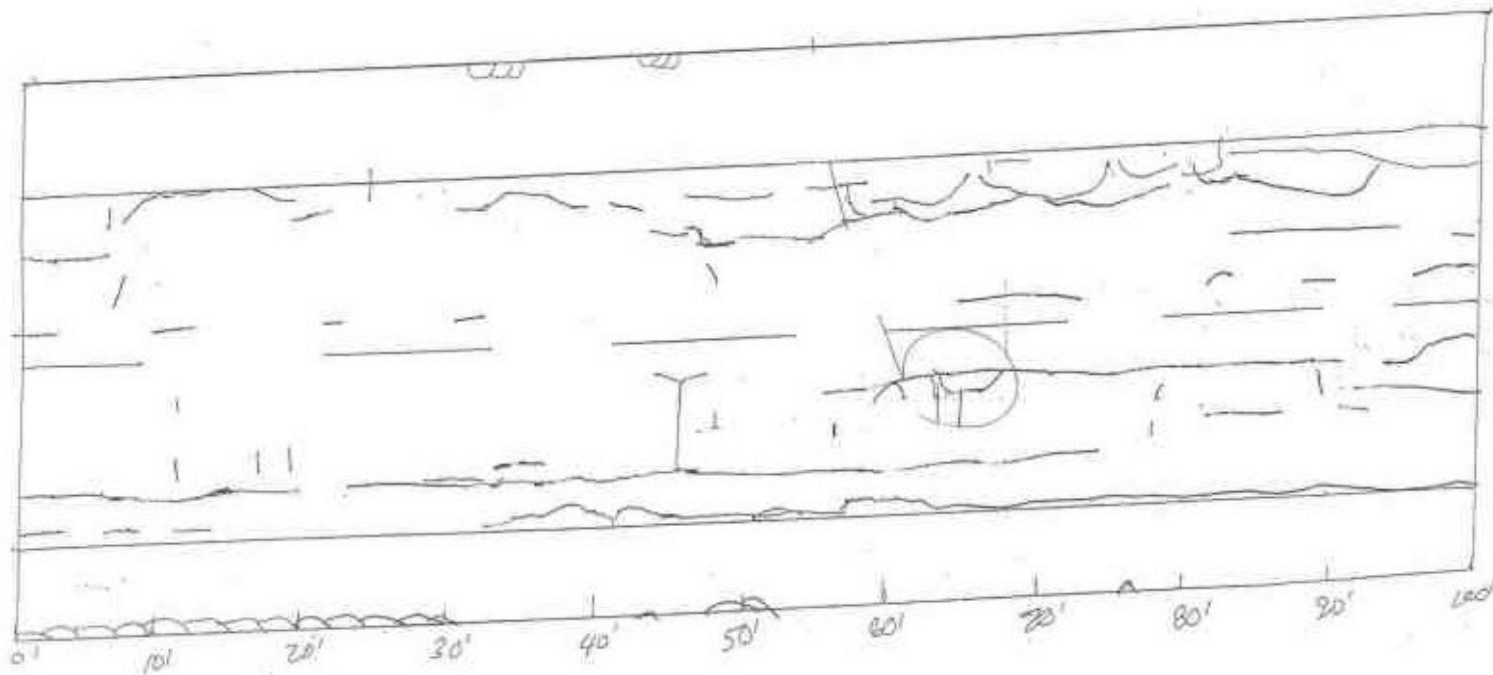
ROAD -

LIMITS -

TOWN - JAMESTOWN

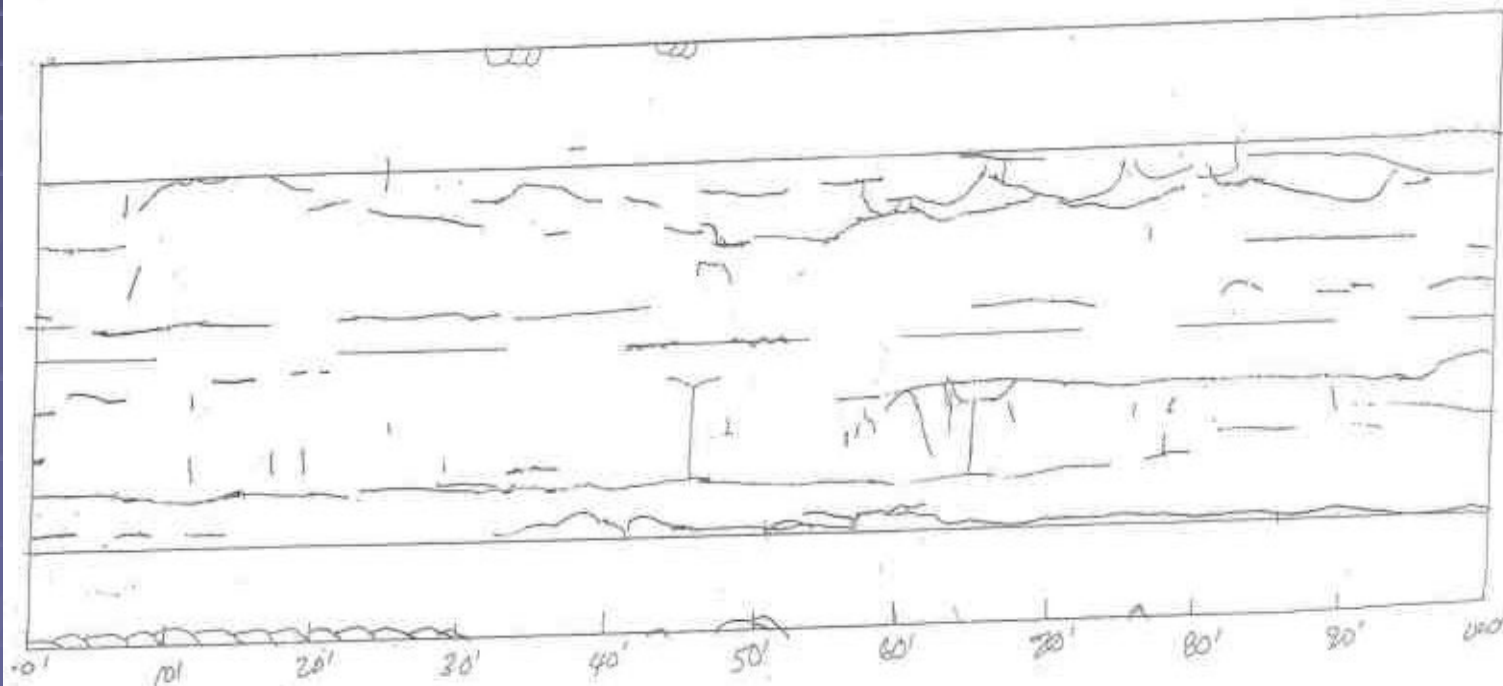
REVIEW DATE - FALL 2003

SECTION ID -



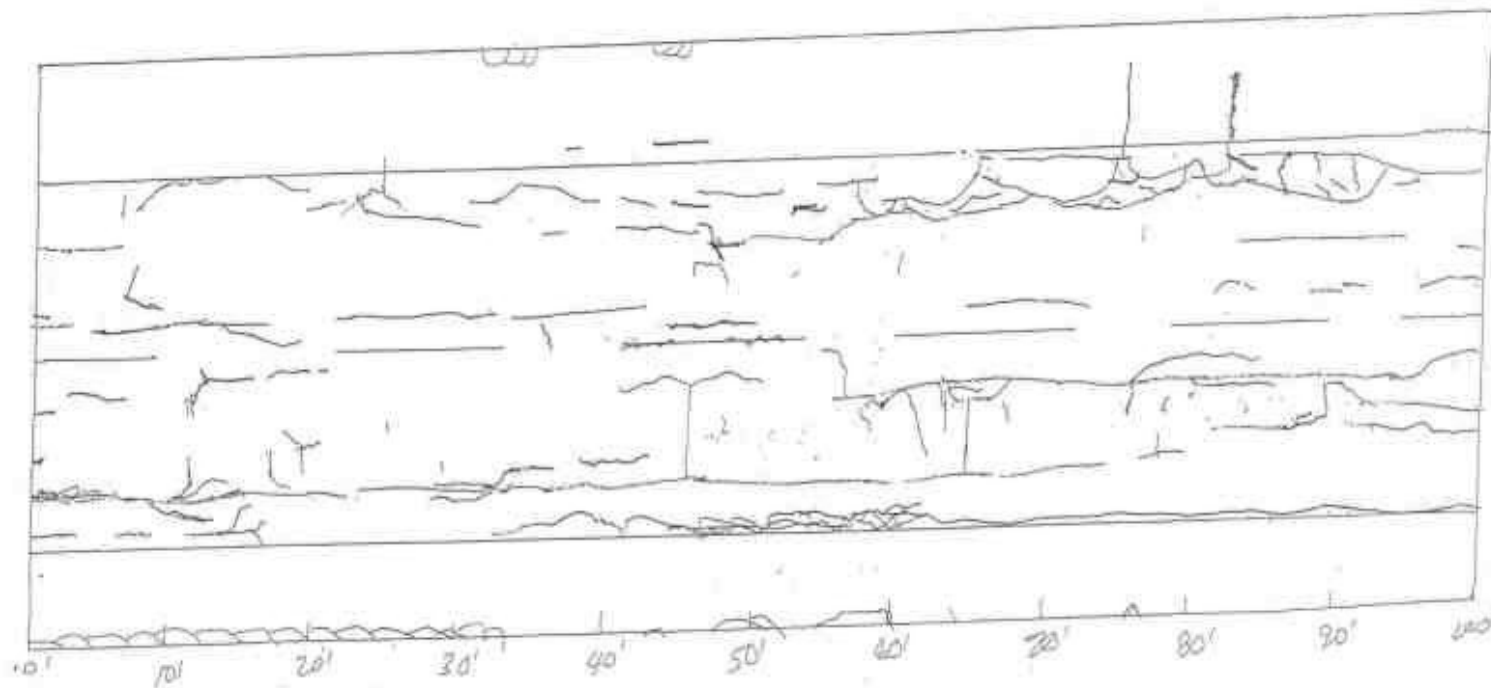
# Section Crack Map 2004

MONITORING TYPE - YEAR PLACED - 2000  
ROAD - LIMITS -  
TOWN - JAMESTOWN REVIEW DATE - FALL 2004  
SECTION ID -



# Section Crack Map 2005

MONITORING TYPE - YEAR PLACED - 2000  
ROAD - LIMITS -  
TOWN - JAMESTOWN REVIEW DATE - FALL 2005  
SECTION ID -



# Section Crack Map 2006

MONITORING TYPE -

YEAR PLACED - 2000

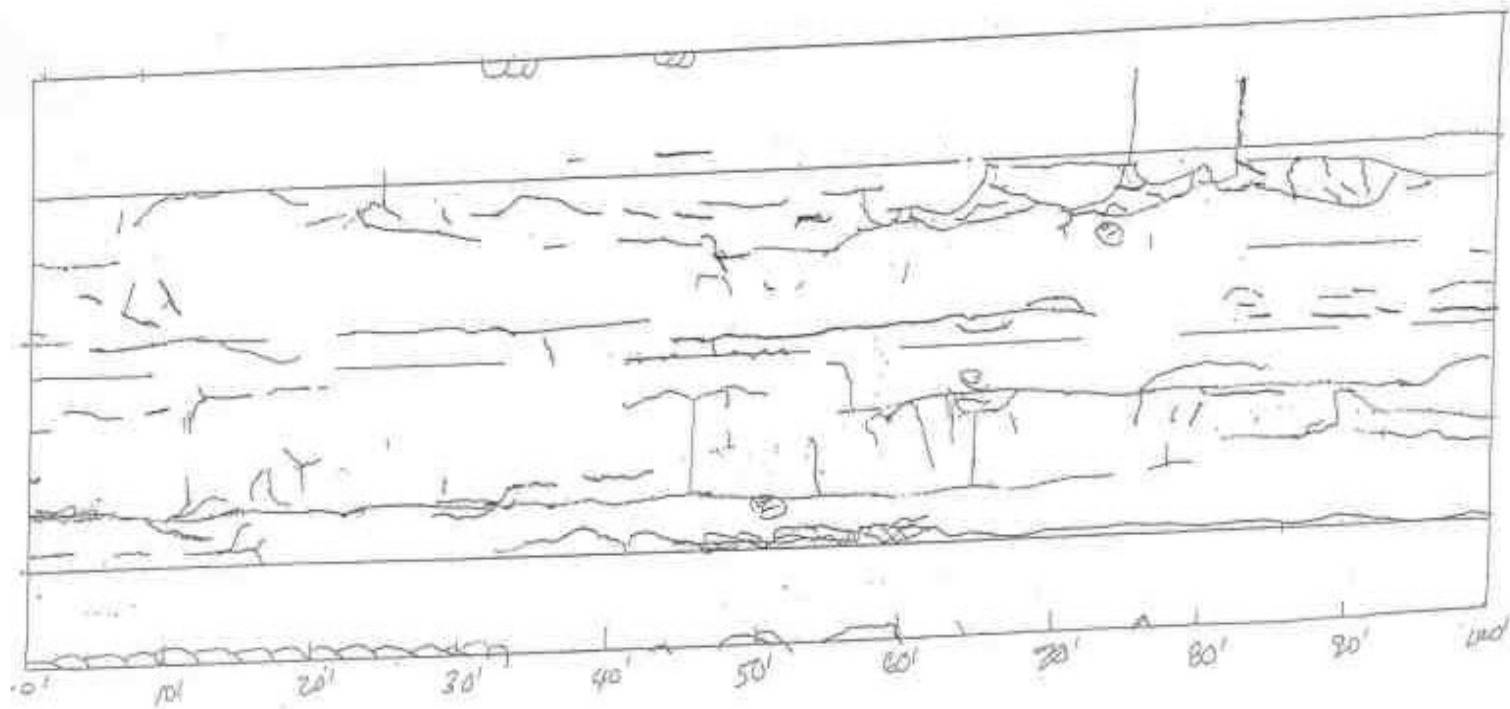
ROAD -

LIMITS -

TOWN - JAMESTOWN

REVIEW DATE - FALL 2006

SECTION ID -





# Field Reporting Form

## RIDOT - PAVEMENT PRESERVATION ROADWAY MONITORING INSPECTION SHEET

ROADWAY NAME: E PROJECT NUMBER: 42  
 FROM: RI-138 TO: ELDRED AVE.  
 SAMPLE UNIT NUMBER: 2

LOCATION OF SAMPLE UNIT (POLE NUMBER, BRIDGE NUMBER, ETC.):

POLE 99 - SOUTHERN LIMIT

SAMPLE UNIT LENGTH: 100 FT. WIDTH (FT.) SHOULDER 1 6  
 SHOULDER 2 6

SURFACE SEAL TYPE:

CONSTRUCTION DATE MONTH: 9 YEAR: 2000

NUMBER OF LANES: 2 4 PHOTOGRAPHS: Y

WEATHER: CLEAR CLOUDY RAINY

LANE DIR.	LANE NO.	LANE WIDTH (FT.)	JOINT OPENING (FT.)	LONG. CR. (FT.)	TRANS. CR. (FT.)	EDGE CR. (FT.)	ALLIG. CR. (SF)	BLOCK CR. (SF)	REFL. CR. (CONC. OL) (FT.)
N	1	13	0	230	53	41	17	12	0
S	1	12	8	167	19	4	0	67	0

LANE DIR.	LANE NO.	LANE WIDTH (FT.)	POTHOLE		PATCHES		RUT DEPTH (in.)	SHOVING (SF)	RAVEL/STONE LOSS (SF)	RIFFLING (SF)	POLISHED AGG. (SF)
			#	SF	#	SF					
N	1	13	0		0		0	0	0	0	0
S	1	12	0		0		0	0	0	0	0

STRIPING: TYPE: PAINT CONDITION: Good

COMMENTS:

LEGEND:

LANE NUMBER: 2 LANE ROADS: 1  
 4 LANE ROADS: 1 = HIGH SPEED LANE  
 2 = LOW SPEED LANE  
 PROJECT NUMBER: NUMBER ASSIGNED IN CONTRACT (E.G., RCS1240)

SURVEYOR NAME: PAUL PETSCHINA, PHIL SURVEY DATE: 12/14/2006  
PERSE

# Frenchtown Road – 2000 (prior to chip seal)



*RIDOT Pavement Preservation Monitoring Program*

# Frenchtown Road – 2000 (after chip seal)



*RIDOT Pavement Preservation Monitoring Program*

# Frenchtown Road – Fall 2001



*RIDOT Pavement Preservation Monitoring Program*

# Frenchtown Road – Fall 2002



*RIDOT Pavement Preservation Monitoring Program*

# Frenchtown Road – Fall 2003



*RIDOT Pavement Preservation Monitoring Program*

# Frenchtown Road – Fall 2004



*RIDOT Pavement Preservation Monitoring Program*

# Frenchtown Road – Fall 2005



*RIDOT Pavement Preservation Monitoring Program*



# Frenchtown Road – Fall 2006



*RIDOT Pavement Preservation Monitoring Program*

# Frenchtown Road – Fall 2007



*RIDOT Pavement Preservation Monitoring Program*

# Sample Monitoring Section Data

## MONITORING SECTION DATA

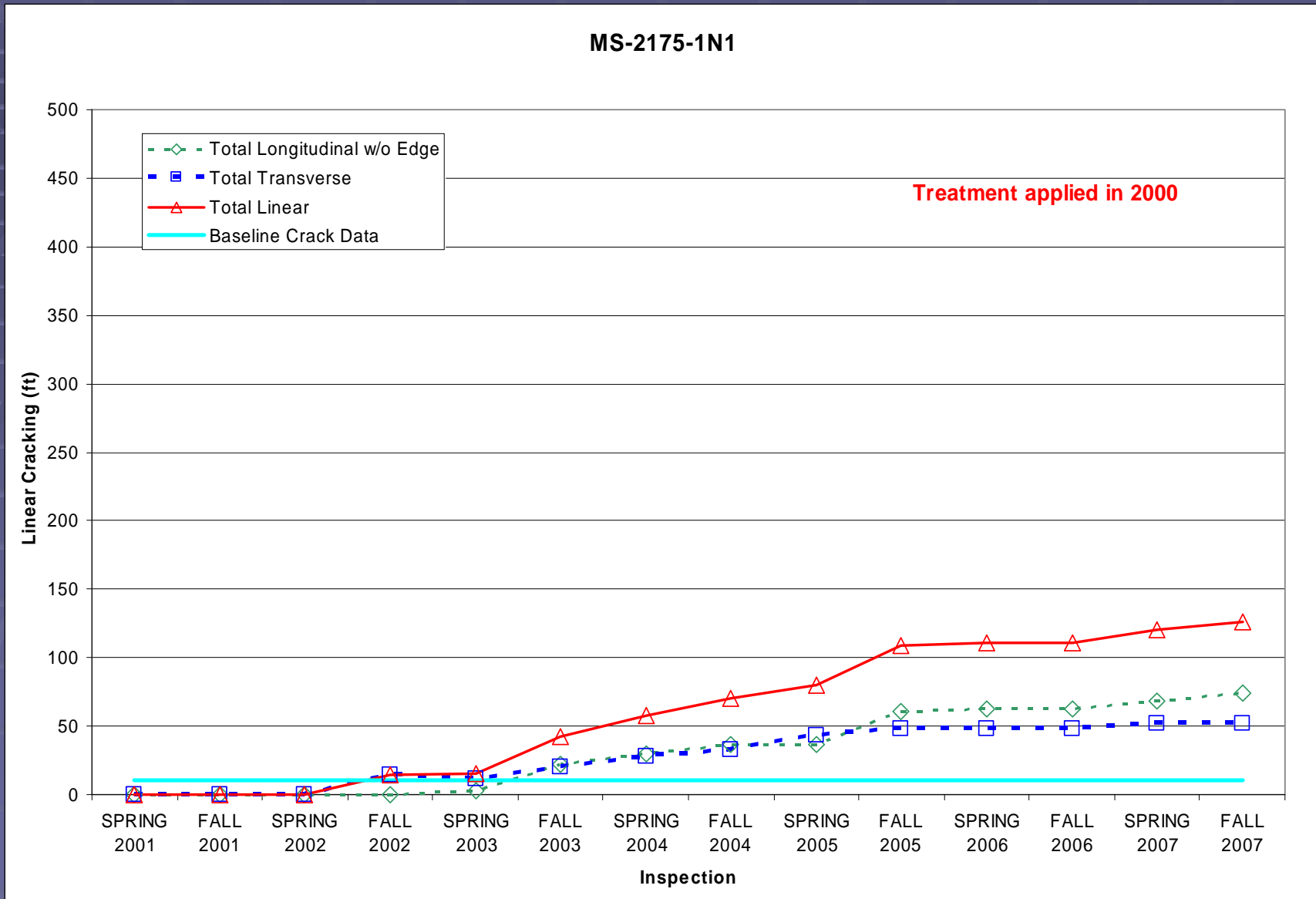
Element ID	ROAD NAME	ROUTE #	LOCATION	SEASON	DATE	JOINT CRK (FT)	EDGE CRK (FT)	LONG CRK (FT)	TOTAL LONG CRK W/EDGE (FT)	TOTAL LONG CRK W/O EDGE (FT)	TRANS CRK (FT)	REFL CRK (FT)	TOTAL TRANS CRK (FT)	TOTAL LINEAR CRK W/O EDGE
SS40xx(02)XX-2N	E	Rt. 1000	Pole 94 – SOUTHERN LIMIT	SPRING 2001	5/9/2001	5	0	48	53	53	4	0	4	57
				FALL 2001	9/24/2001	5	0	50	55	55	4	0	4	59
				SPRING 2002	5/21/2002	5	4	64	73	69	6	0	6	75
				FALL 2002	10/24/2002	5	4	68	77	73	6	0	6	79
				SPRING 2003	4/17/2003	5	4	129	138	134	11	0	11	145
				FALL 2003	11/24/2003	5	4	129	138	134	14	0	14	148
				SPRING 2004	3/9/2004	8	4	172	184	180	17	0	17	207
				FALL 2004	11/9/2004	8	4	150	162	158	15	0	15	173
				SPRING 2005	6/9/2005	8	4	127	172	168	16	0	18	186
				FALL 2005	12/20/2005	8	4	127	172	168	16	0	18	186
				SPRING 2006	5/25/2006	8	4	167	179	179	19	0	21	196
				FALL 2006	12/14/2006	8	4	167	179	175	19	0	21	196
				SPRING 2007	5/31/2007	8	4	173	218	214	20	0	20	234
				FALL 2007	10/15/2007	8	4	173	218	214	20	0	20	234
<b>TOTAL DISTRESS</b>						8	4	173	218	214	20	0	20	234

BLOCK CRACKING (FT <sup>2</sup> )	ALLIGATOR CRACKING (FT <sup>2</sup> )	RUTTING	SHOVING	RAVELING (FT <sup>2</sup> )	BLEEDING (FT <sup>2</sup> )	POLISH (FT <sup>2</sup> )	POTHoles		UTILITY PATCHES		AADT	IRI	SKID RESULTS	PAVEMENT STRUCTURE
							(#)	(FT <sup>2</sup> )	(#)	(FT <sup>2</sup> )				
0	0	0	0	0	0	0	0	0	0	0				0.5" SURFACE TREATMENT 2" CLASS I-1 5 1/4" BINDER/BASE 12" GRAVEL BORROW
0	0	0	0	0	0	0	0	0	0	0				
0	0	0	0	0	0	0	0	0	0	0				
0	0	0	0	0	0	0	0	0	0	0				
0	0	0	0	0	0	0	0	0	0	0				
0	0	0	0	0	0	0	0	0	0	0				
0	0	0	0	0	0	8	0	0	0	0				
24	0	0	0	0	0	8	0	0	0	0				
67	0	0	0	0	0	8	0	0	0	0				
67	0	0	0	0	20	8	0	0	0	0				
67	0	0	0	0	20	8	0	0	0	0	2000		52.4	
67	4	0	0	0	27	20	0	0	1	20				
67	16	0	0	0	35	20	0	0	1	20				
67	16	0	0	0	35	20	1	8	1	20				
67	16	0	0	0	35	20	1	8	1	20				

# Initial Data Analysis

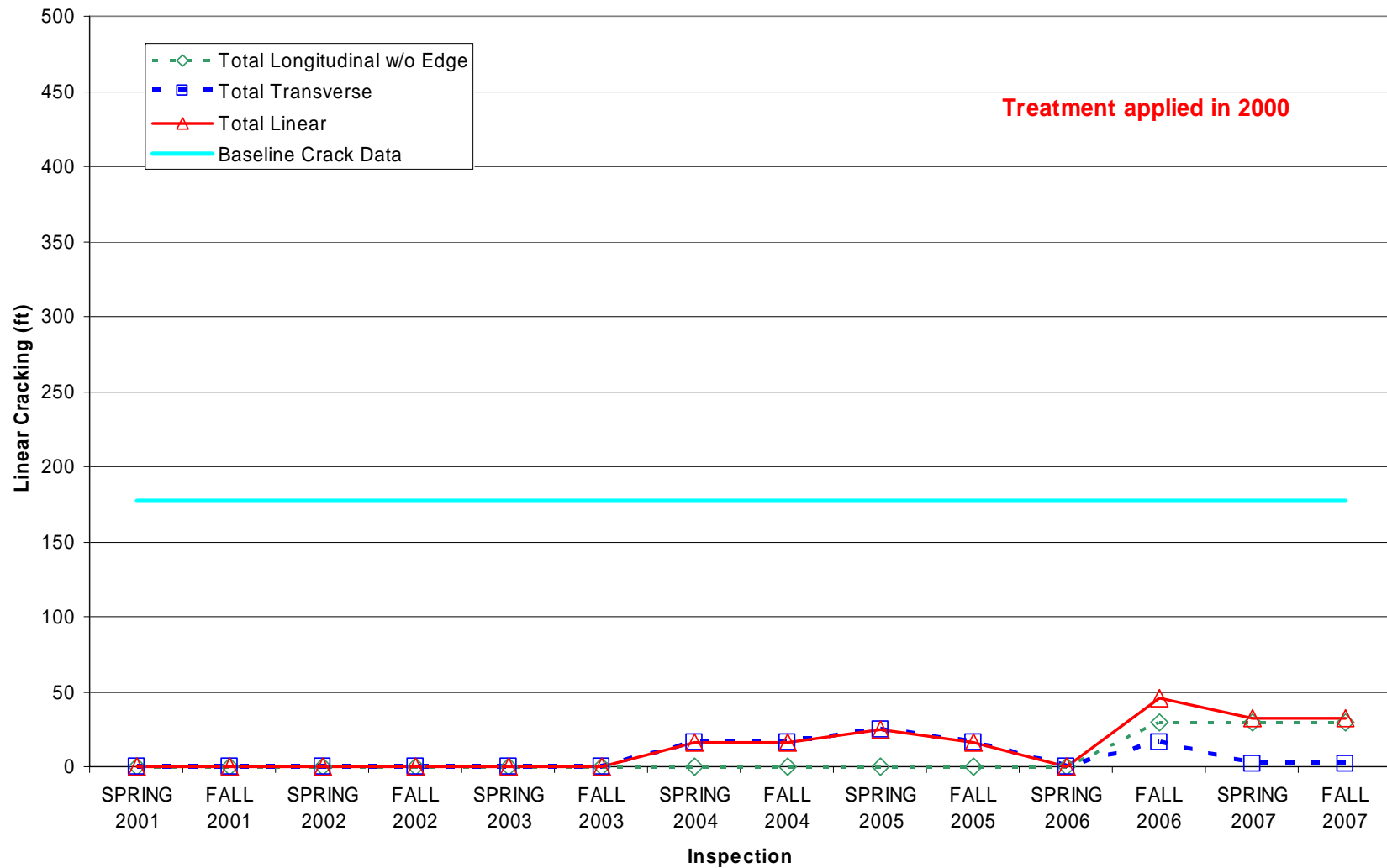
- Distress data that is most relevant to pavements in Rhode Island is cracking
- Decided to plot total cracking (linear) vs. time initially; severity of crack is not taken into account
- Block cracking – perimeter of the block as well as area is measured.

# Linear Cracking Development – Sample Microsurfacing Section

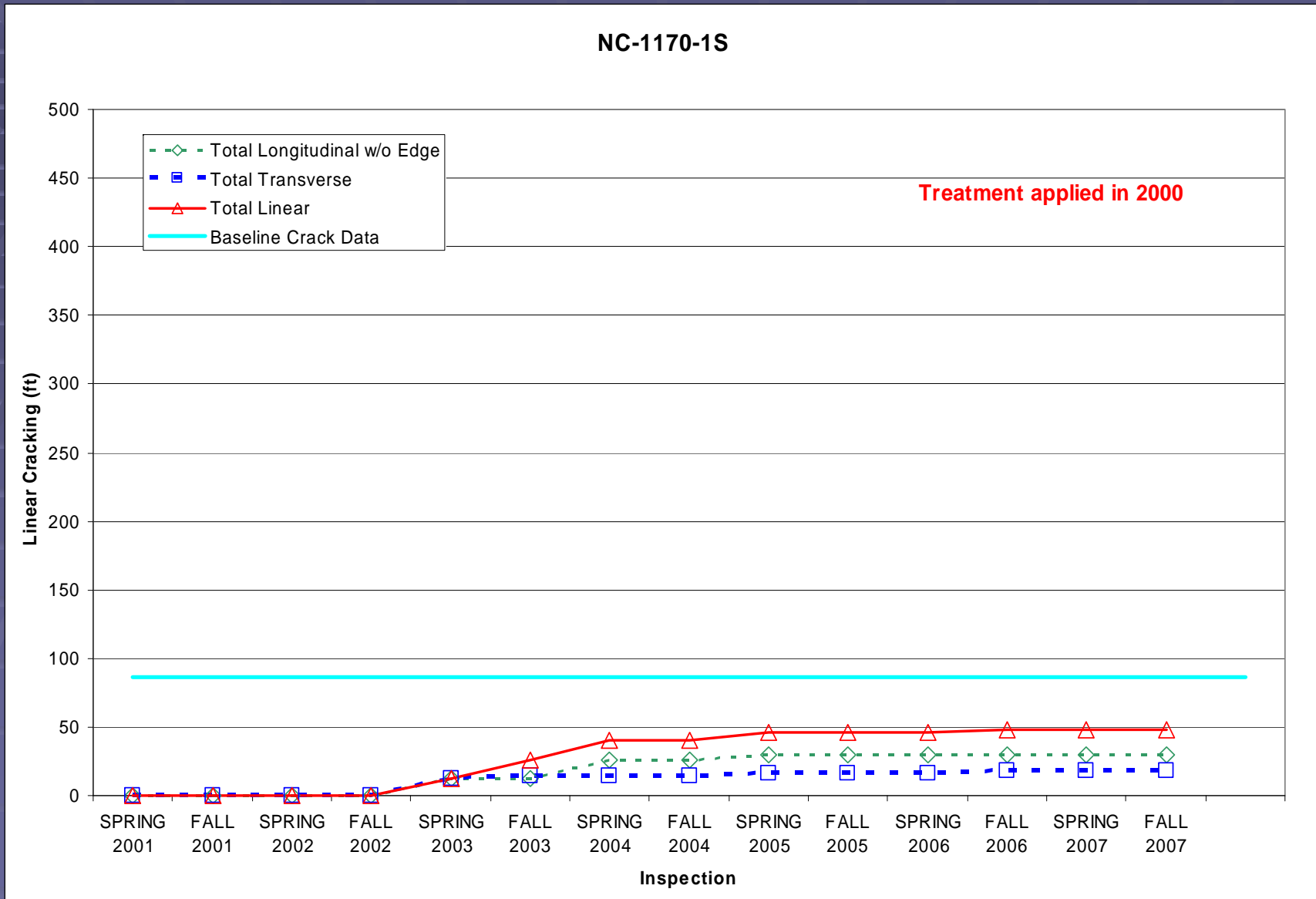


# Linear Cracking Development – Sample Rubberized Chip Seal Section

RCS-2250(01)-1W2

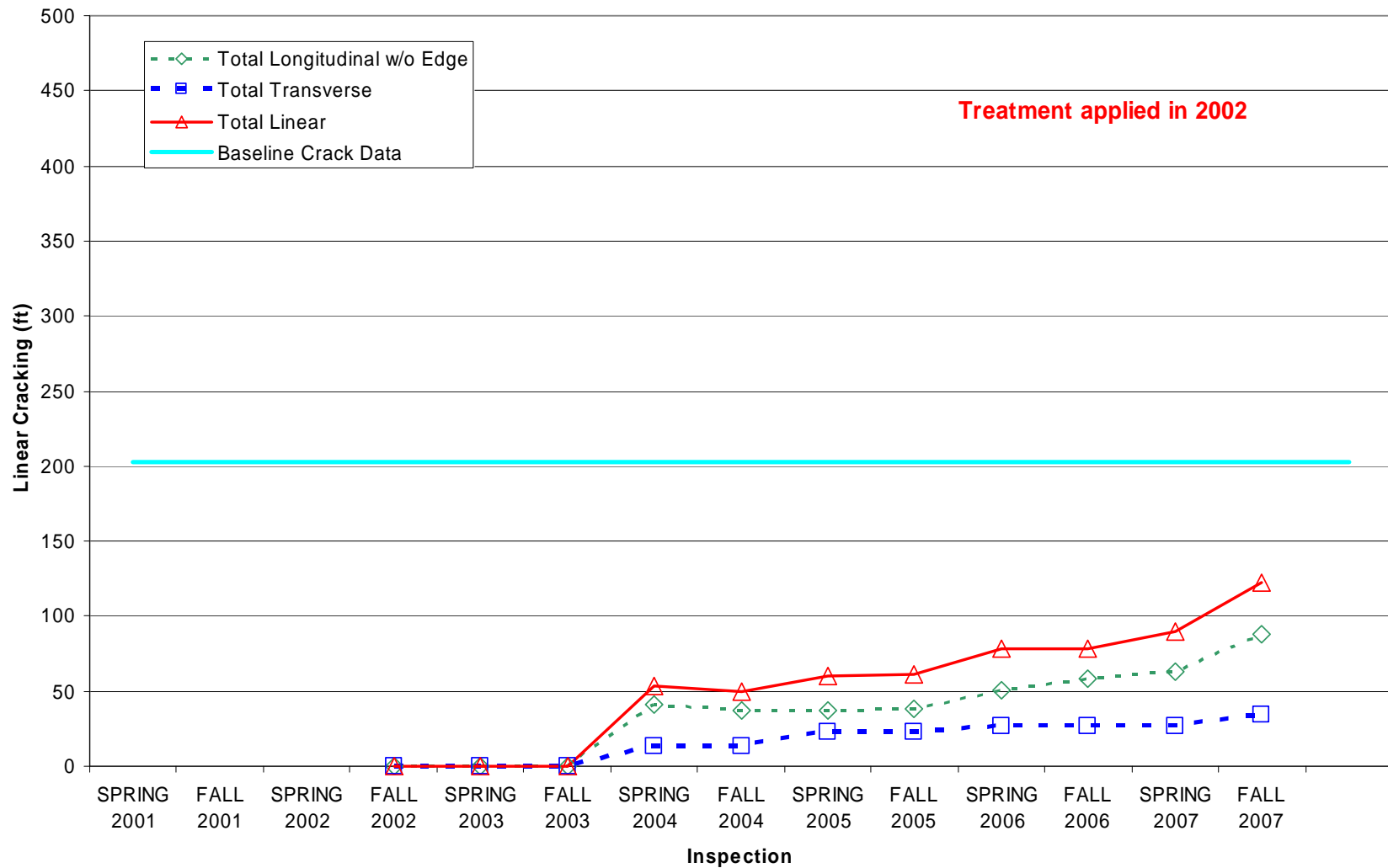


# Linear Cracking Development – Sample Nova Chip Section



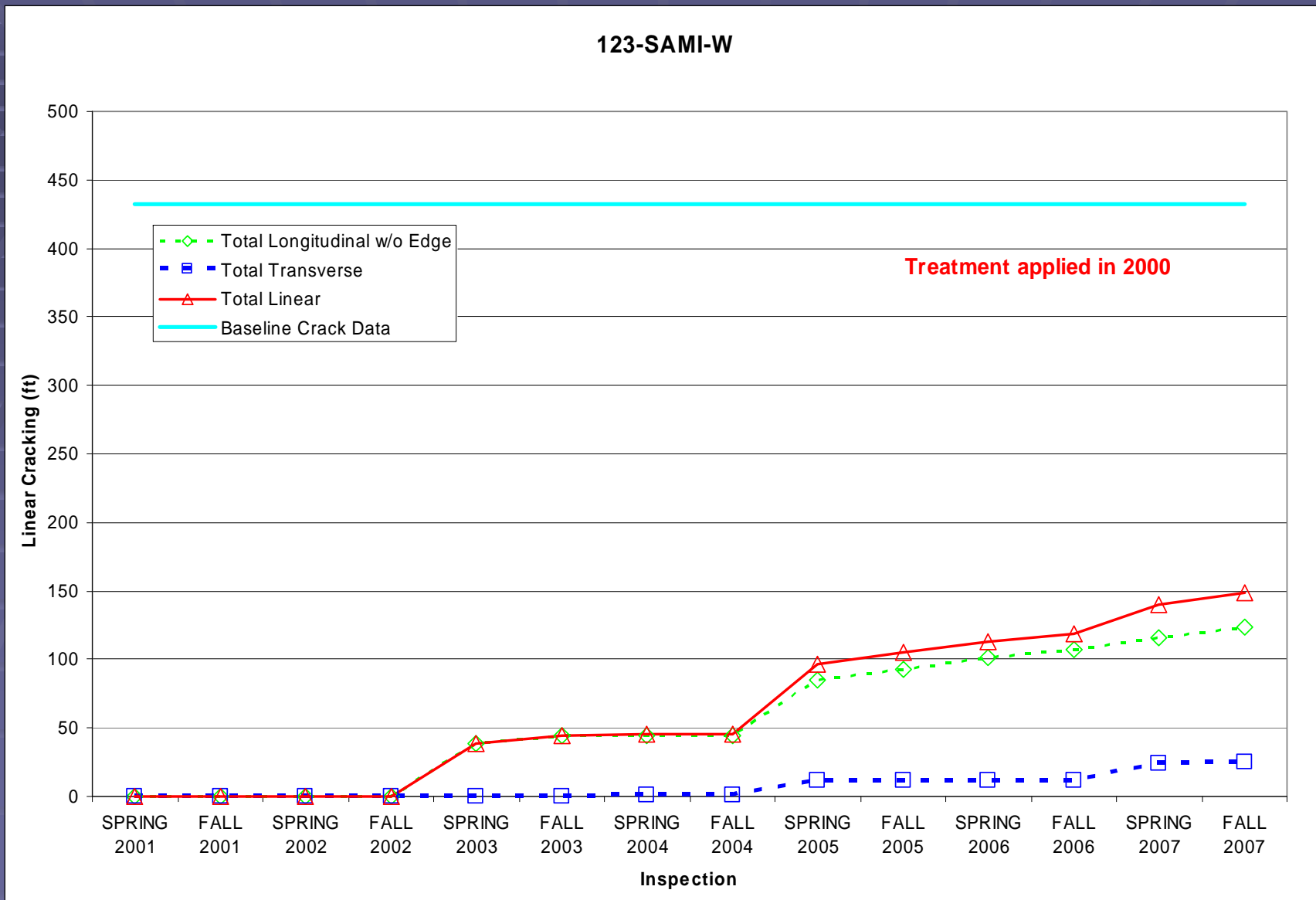
# Linear Cracking Development – Sample Thin Overlay Section

SS3080(02)TO-1W





# Linear Cracking Development – Sample SAMI Section



# Next Steps

- Monitor
  - old sections to failure or overlay
  - new treatment types or materials will warrant monitoring
- Analysis
  - Continue to plot distress vs. time
  - Determine the times and crack density associated with crack progression from linear to block to alligator
  - Track Skid numbers/IRI over time if possible
  - Compare treatment distress with pavement structure and traffic loading