# APPENDIX D

## Generalized Pavement Performance Models

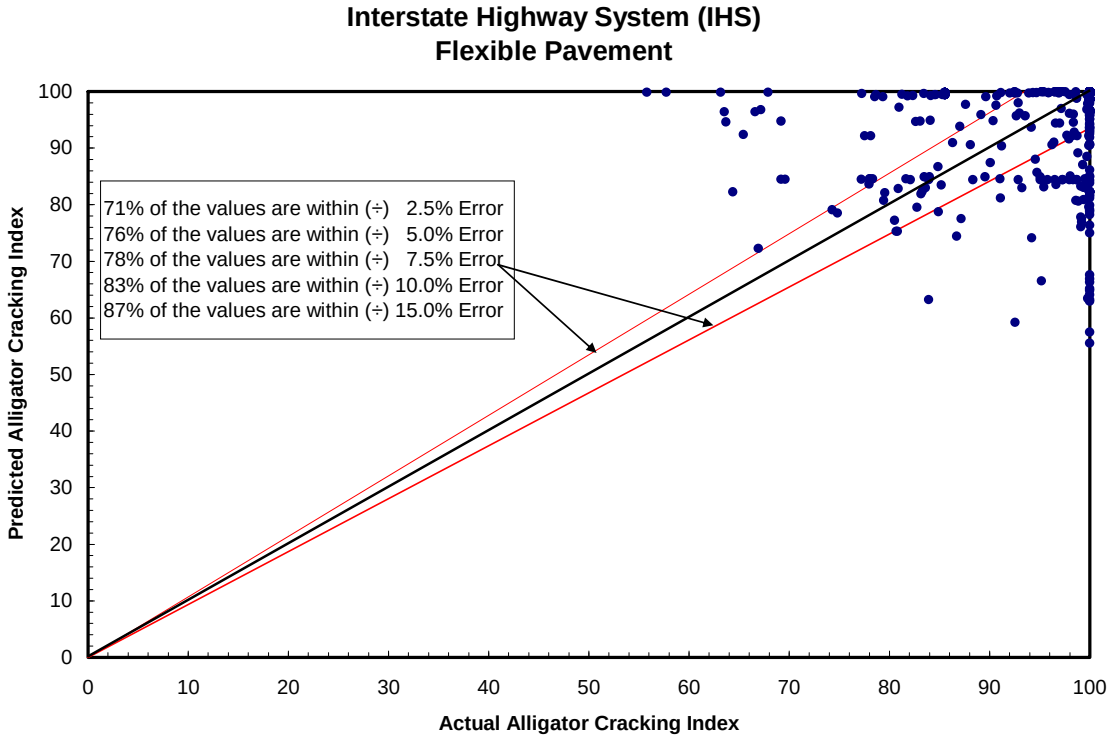
# Asphalt Concrete Pavements
# (ASP)

## IHS –Alligator Cracking Index_ASP

$$ACI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.55, $b_1$=0.15, and C= -0.75

| (+ -) Error | % of data (758) |
|---|---|
| 2.5 | 71 |
| 5.0 | 76 |
| 7.5 | 78 |
| 10.0 | 83 |
| 15.0 | 87 |

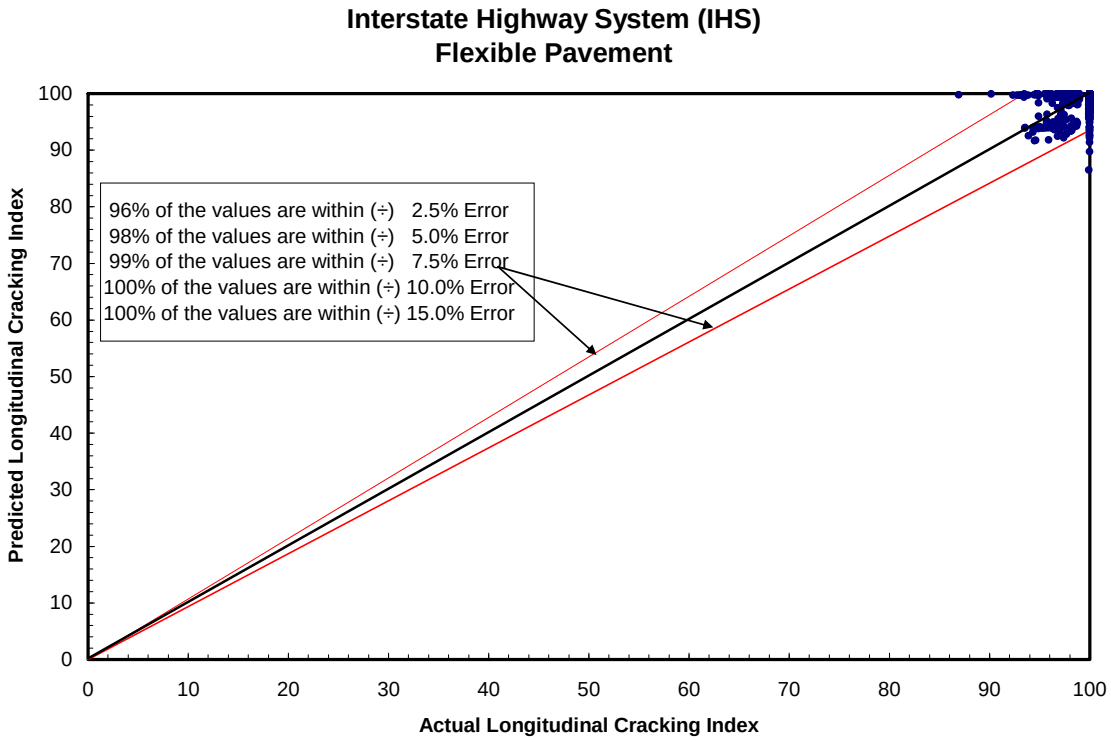


## IHS –Longitudinal Cracking Index_ASP

$$LCI = 100 - B_1 \left( t_A \right)^{a_{avg}}$$

$a_{avg}$=1.31, $B_1$=0.1

| (+ -) %Error | % 0f data (2039) |
|---|---|
| 2.5 | 96 |
| 5 | 98 |
| 7.5 | 99 |
| 10 | 100 |
| 15 | 100 |

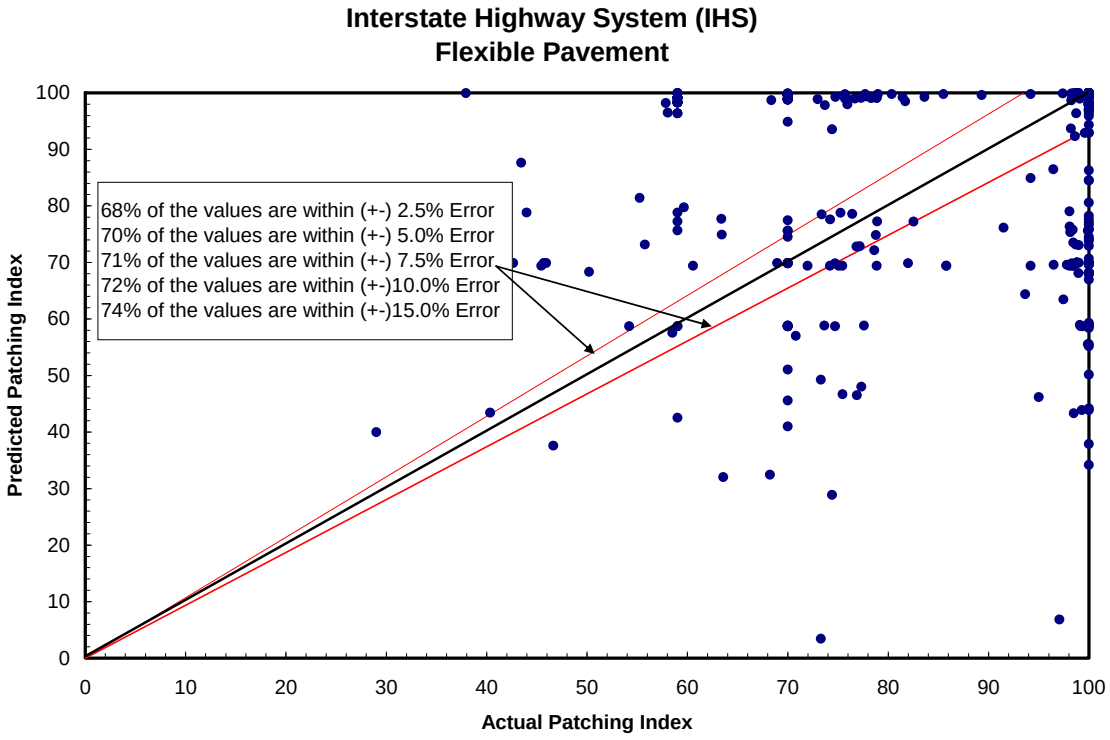


## IHS –Patching Index_ASP

$$PI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.20, $b_1$=0.15, and C= -2.75

| (+ -) %Error | % 0f data (1120) |
|---|---|
| 2.5 | 68 |
| 5.0 | 70 |
| 7.5 | 71 |
| 10.0 | 72 |
| 15.0 | 74 |

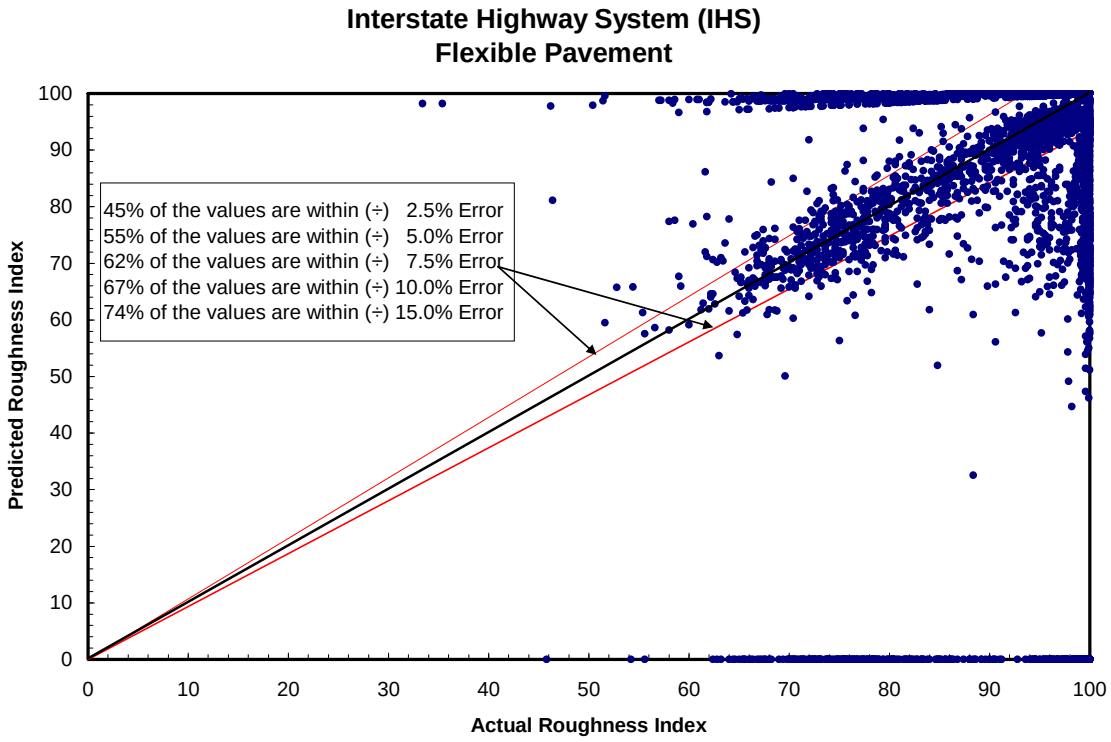


## IHS –Roughness Index_ASP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.55, $b_1$=0.15, and C= -0.75

| (+ -) Error | % of data (4927) |
|---|---|
| 2.5 | 45 |
| 5.0 | 55 |
| 7.5 | 62 |
| 10.0 | 68 |
| 15.0 | 74 |

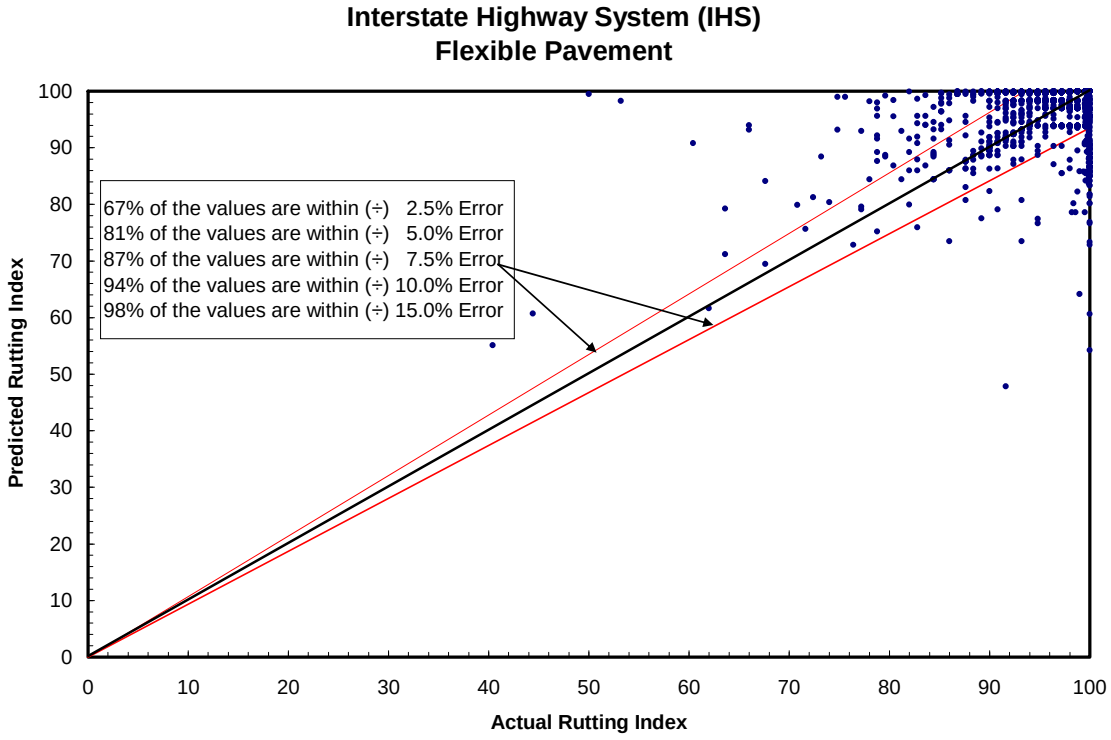


## IHS –Rutting Index_ASP

$$RTI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.50, $B_1$=0.159

| (+ -) %Error | % 0f data (2045) |
|---|---|
| 2.5 | 67 |
| 5.0 | 81 |
| 7.5 | 87 |
| 10.0 | 94 |
| 15.0 | 98 |

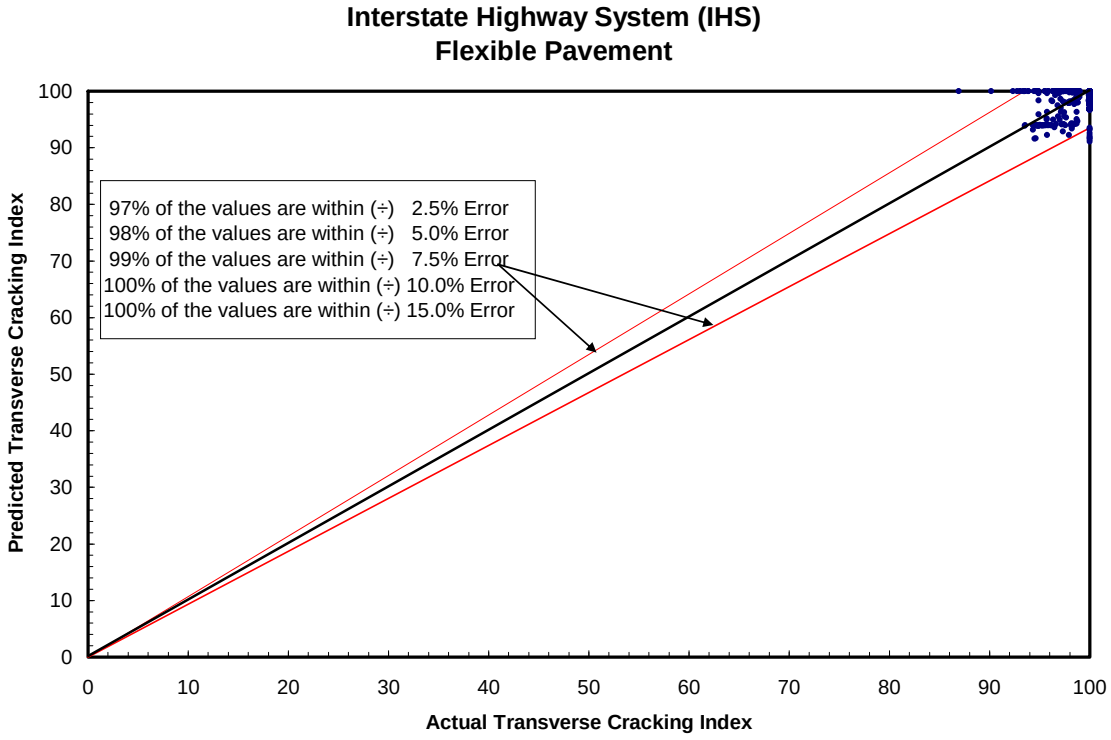


## IHS –Transverse Cracking Index_ASP

$$TCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.31, $B_1$=0.10

| (+ -) Error | % 0f data (2039) |
|---|---|
| 2.5 | 97 |
| 5.0 | 98 |
| 7.5 | 99 |
| 10.0 | 100 |
| 15.0 | 100 |

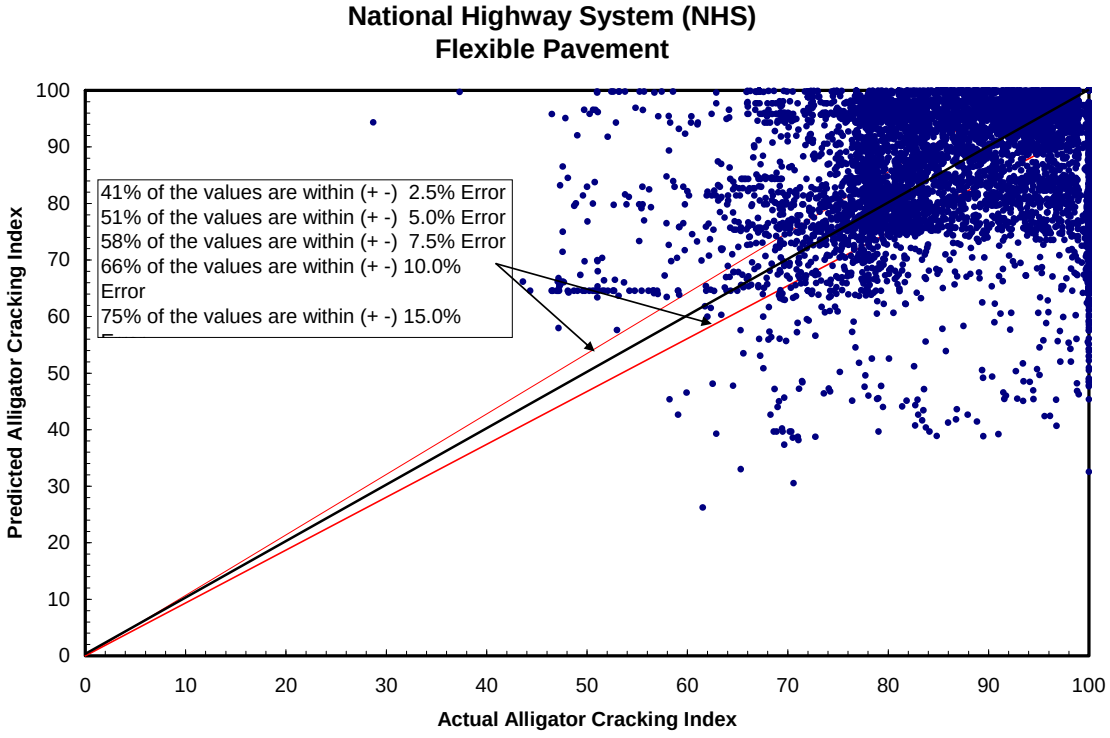


## NHS –Alligator Cracking Index_ASP

$$ACI = 100 - B_1 \left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.60, $B_1$=0.10

| (+ -) Error | % 0f data (8803) |
|---|---|
| 2.5 | 41 |
| 5.0 | 51 |
| 7.5 | 58 |
| 10.0 | 66 |
| 15.0 | 75 |

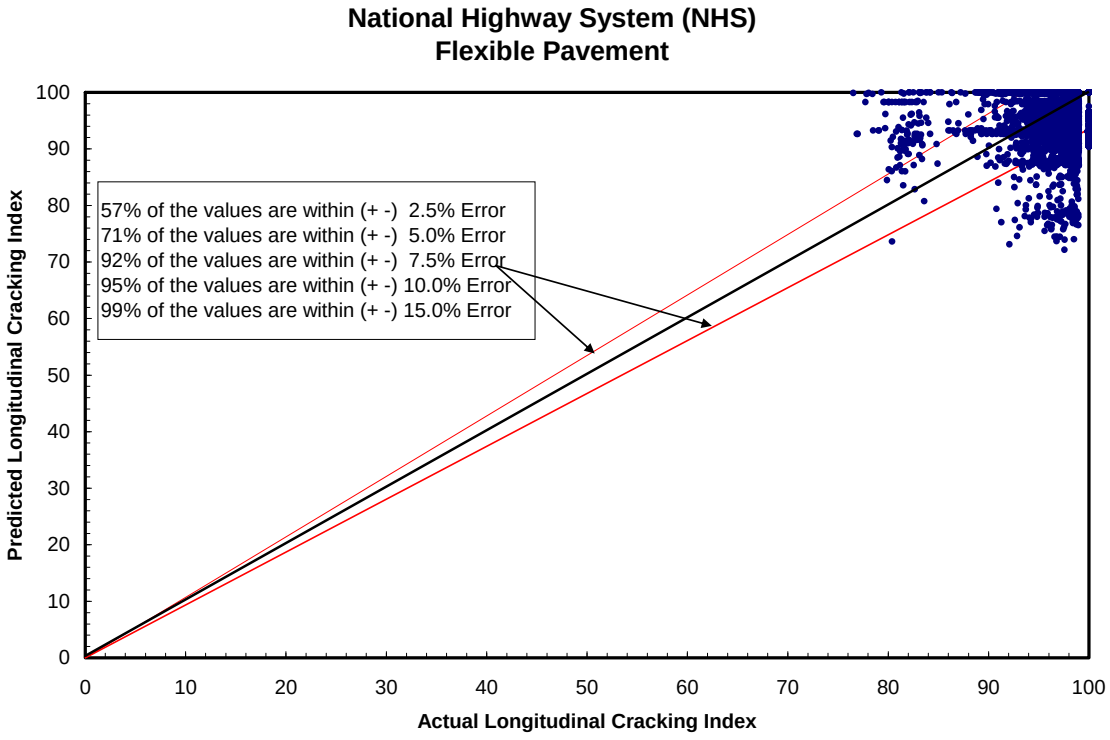


## NHS –Longitudinal Cracking Index_ASP

$$LCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.35, $B_1$=0.25

| (+ -) %Error | % of data (7849) |
|---|---|
| 2.5 | 57 |
| 5.0 | 71 |
| 7.5 | 92 |
| 10.0 | 95 |
| 15.0 | 99 |

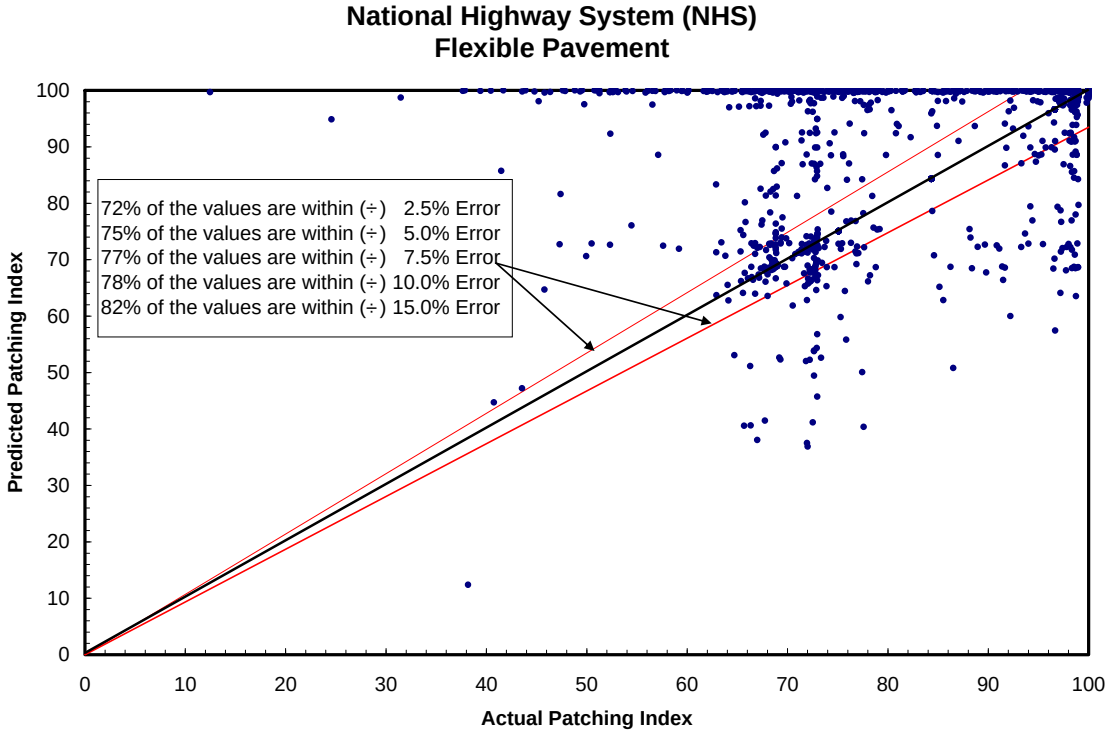


## NHS –Patching Index_ASP

$$PI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.54, $B_1$=0.0036

| (+ -) %Error | % 0f data (3838) |
|---|---|
| 2.5 | 72 |
| 5 | 75 |
| 7.5 | 77 |
| 10 | 79 |
| 15 | 82 |

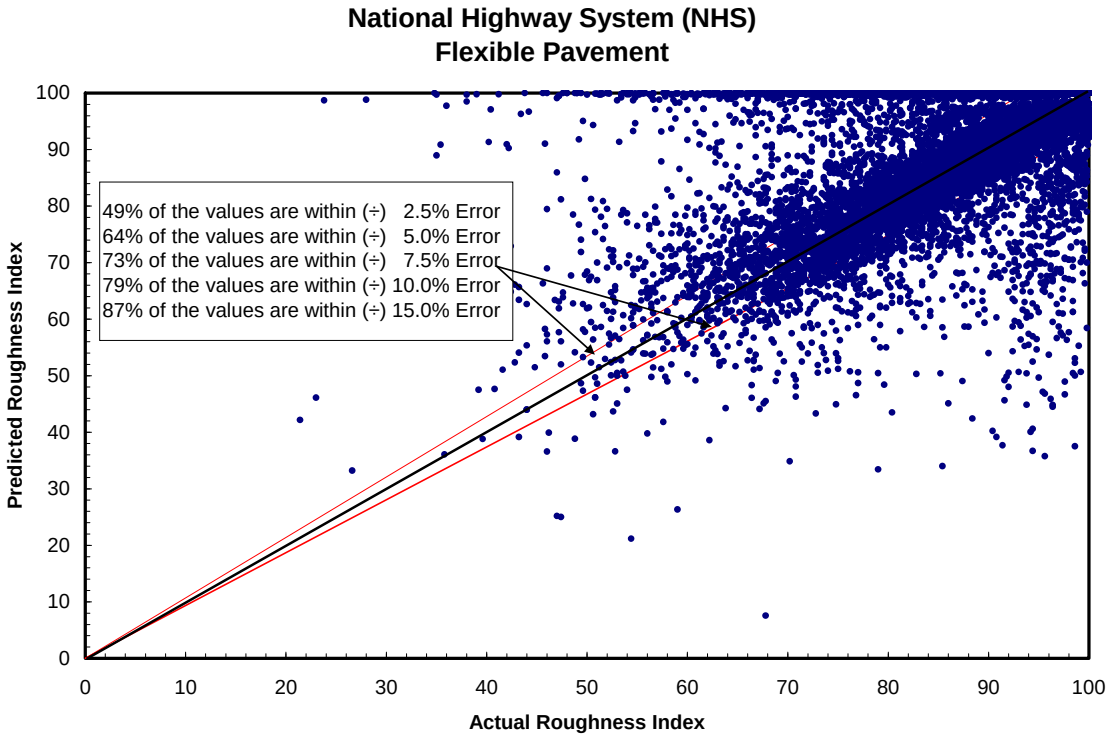


## NHS –Roughness Index_ASP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.25, $b_1$=0.35, and C=0.125

| (+ -) %Error | % of data (14576) |
|---|---|
| 2.5 | 54 |
| 5 | 65 |
| 7.5 | 74 |
| 10 | 80 |
| 15 | 87 |

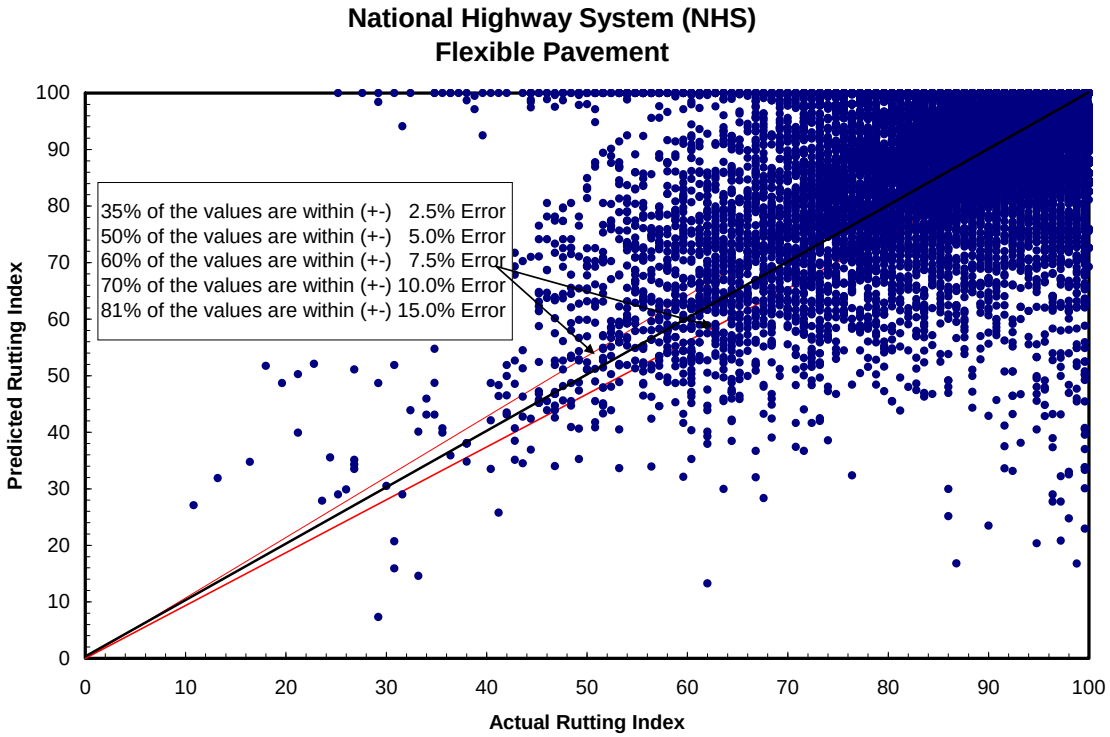


## NHS –Rutting Index_ASP

$$RTI = 100 - 10^{\left[b_1 (t_A)^{a1} \log(t_A) + C\right]}$$

$a_1$=0.25, $b_1$=0.65, and C=-0.625

| (+ -) %Error | % 0f data (16250) |
|---|---|
| 2.5 | 35 |
| 5 | 50 |
| 7.5 | 60 |
| 10 | 70 |
| 15 | 81 |

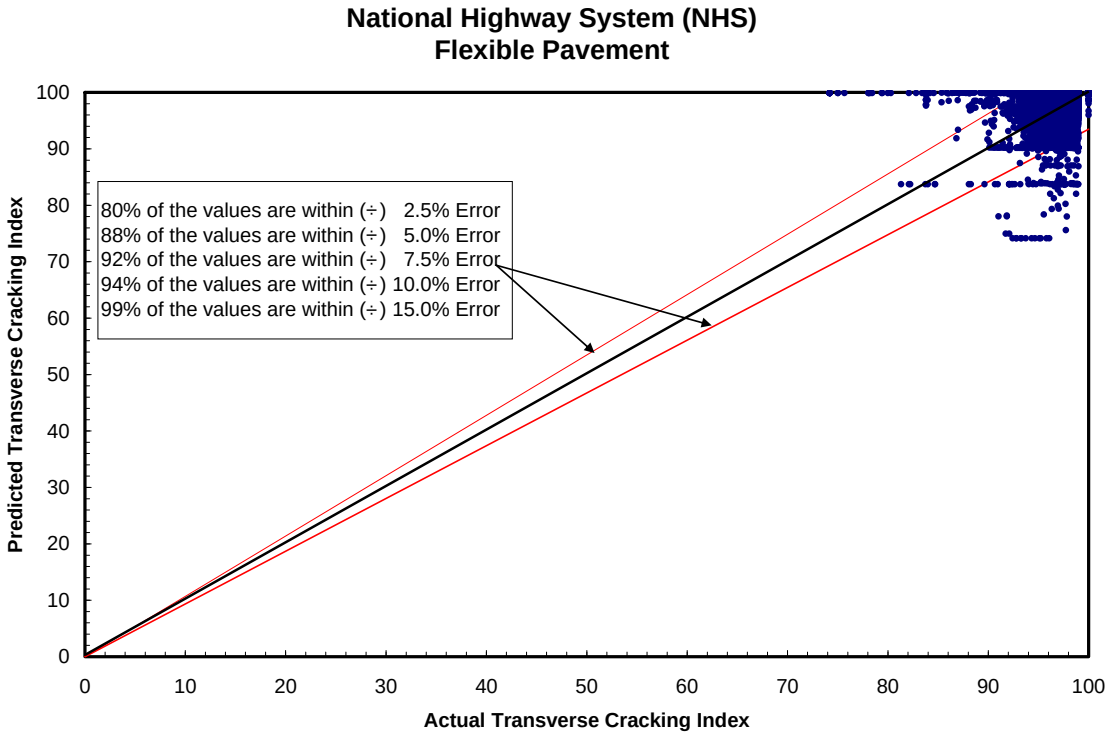


## NHS –Transverse Cracking Index_ASP

$$TCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.34, $B_1$=0.10

| (+ -) Error | % 0f data (10878) |
|---|---|
| 2.5 | 80 |
| 5 | 88 |
| 7.5 | 92 |
| 10 | 94 |
| 15 | 99 |

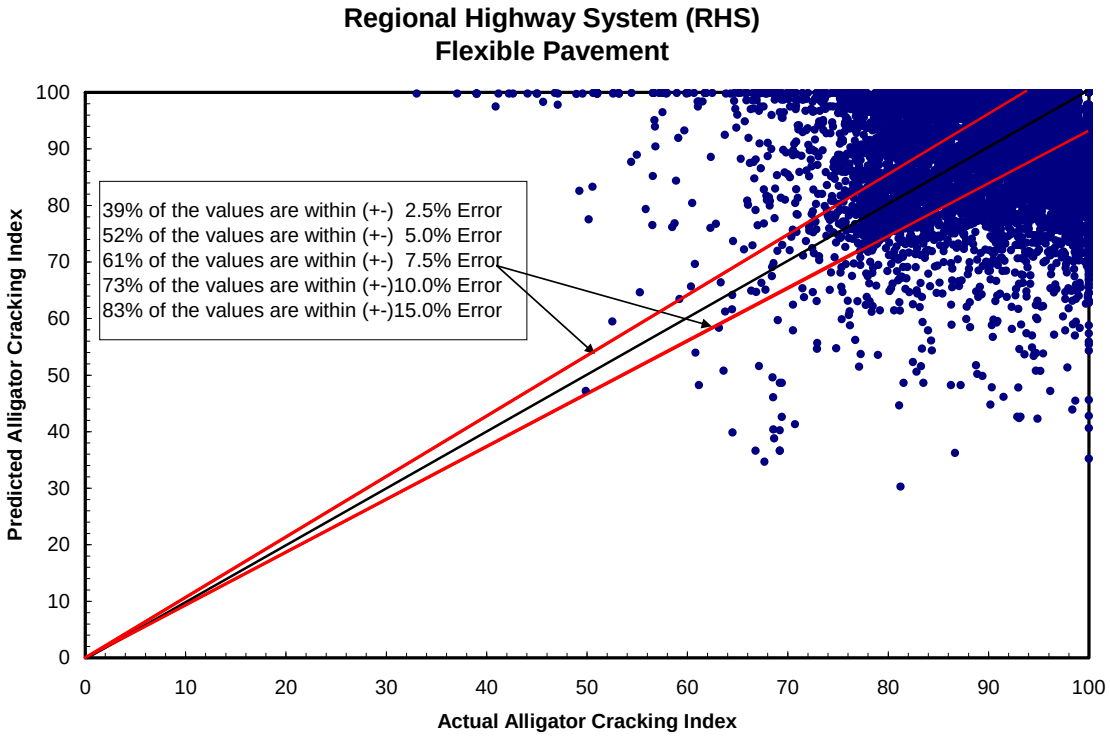


## RHS –Alligator Cracking Index_ASP

$$ACI = 100 - B_1 \left( t_A \right)^{a_{avg}}$$

$a_{avg}$=1.75, $B_1$=0.063

| (+ -) Error | % of data (8713) |
|---|---|
| 2.5 | 39 |
| 5 | 52 |
| 7.5 | 61 |
| 10 | 73 |
| 15 | 83 |

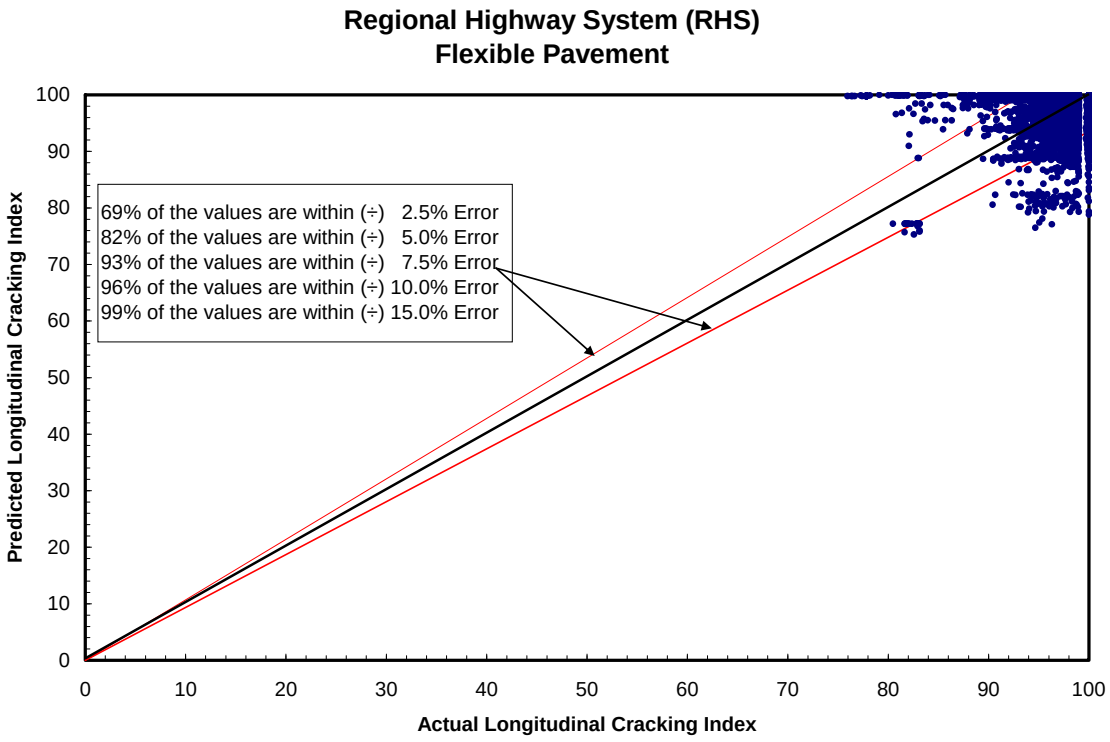


## RHS –Longitudinal Cracking Index_ASP

$$LCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.35, $B_1$=0.10

| (+ -) %Error | % of data (9027) |
|---|---|
| 2.5 | 69 |
| 5 | 82 |
| 7.5 | 93 |
| 10 | 96 |
| 15 | 99 |

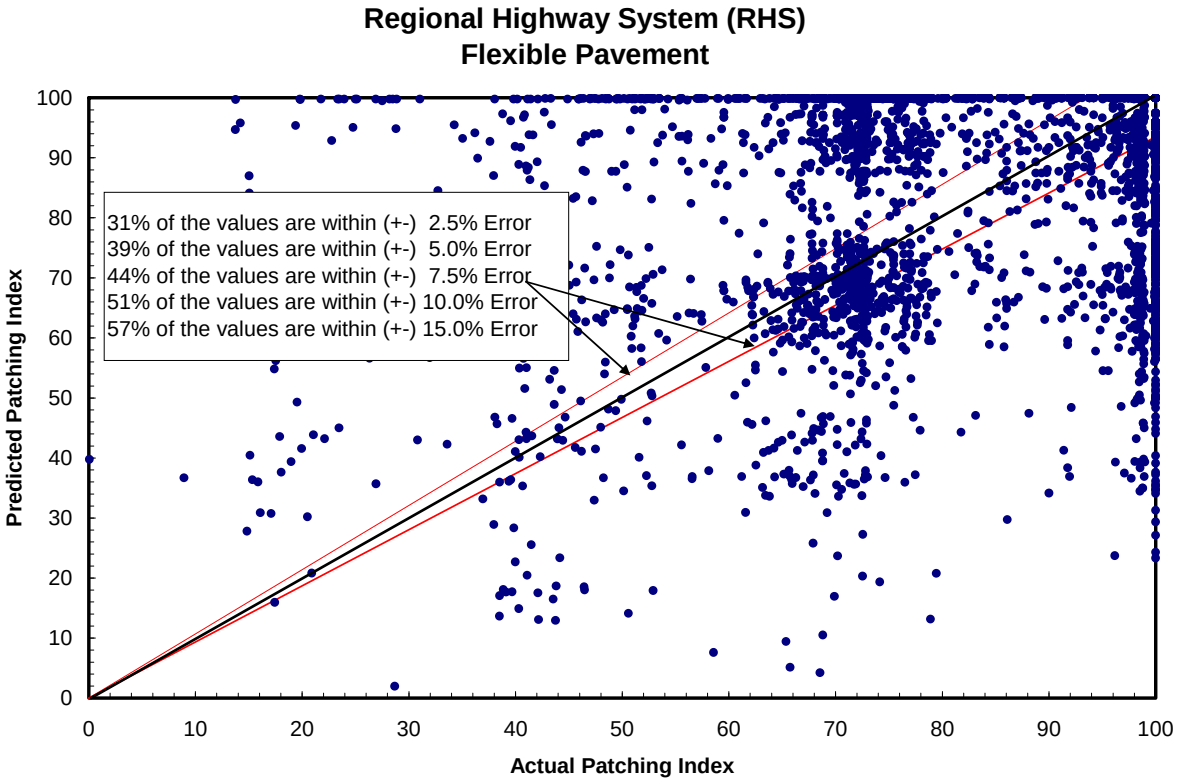


## RHS –Patching Index_ASP

$$PI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.52, $B_1$=0.150

| (+ -) %Error | % 0f data (3926) |
|---|---|
| 2.5 | 31 |
| 5.0 | 39 |
| 7.5 | 44 |
| 10.0 | 51 |
| 15.0 | 57 |

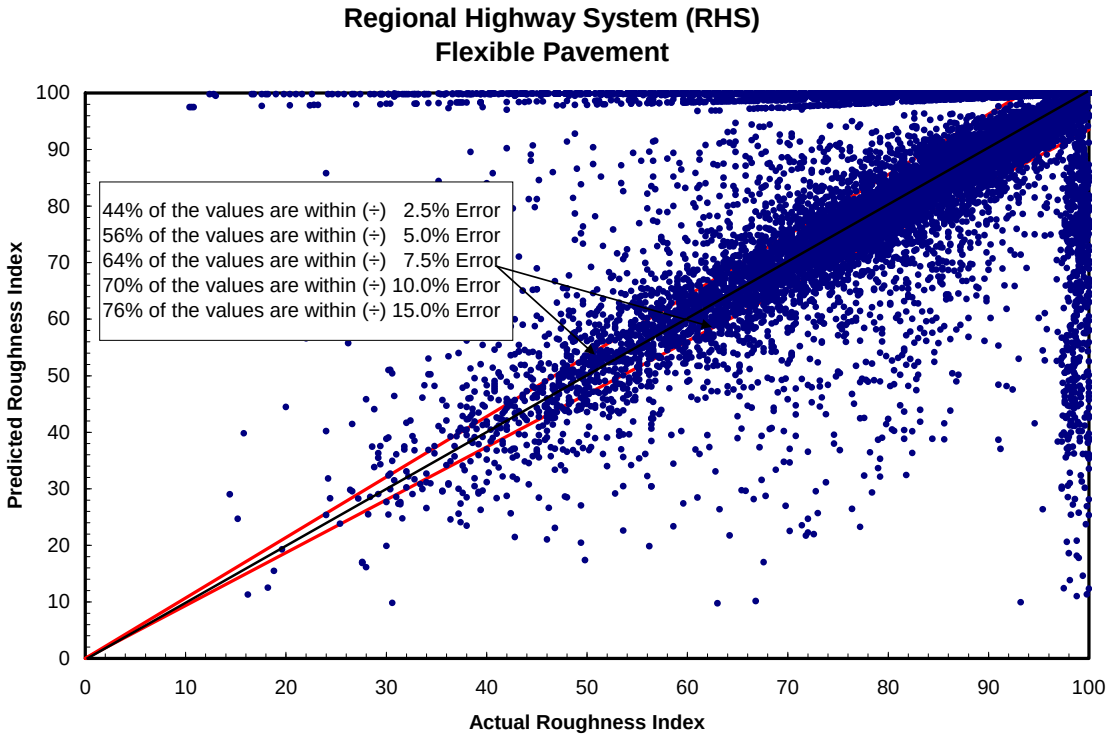


## RHS –Roughness Index_ASP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.25, $b_1$=0.40, and C=-0.50

| (+ -) %Error | % 0f data (14530) |
|---|---|
| 2.5 | 44 |
| 5.0 | 56 |
| 7.5 | 64 |
| 10.0 | 70 |
| 15.0 | 76 |

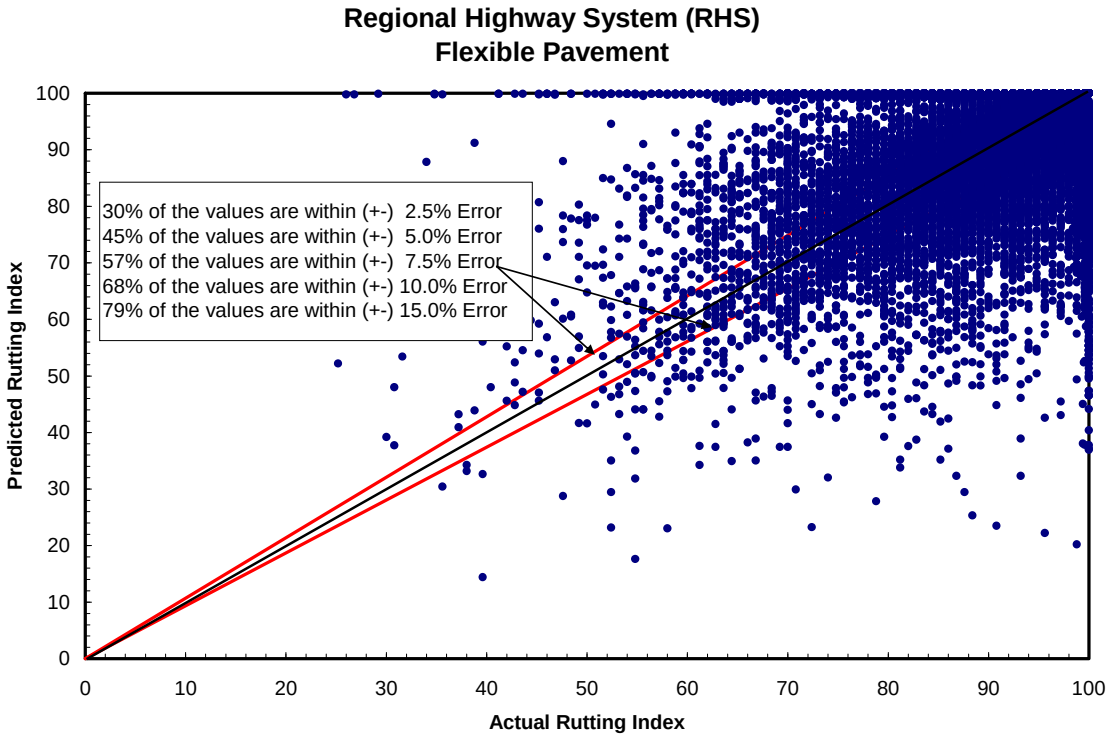


## RHS –Rutting Index_ASP

$$RTI = 100 - 10^{\left[b_1 (t_A)^{a1} \log(t_A) + C\right]}$$

$a_1$=0.15, $b_1$=0.86, and C= 0.14

| (+ -) %Error | % 0f data (12383) |
|---|---|
| 2.5 | 30 |
| 5.0 | 45 |
| 7.5 | 57 |
| 10.0 | 68 |
| 15.0 | 79 |

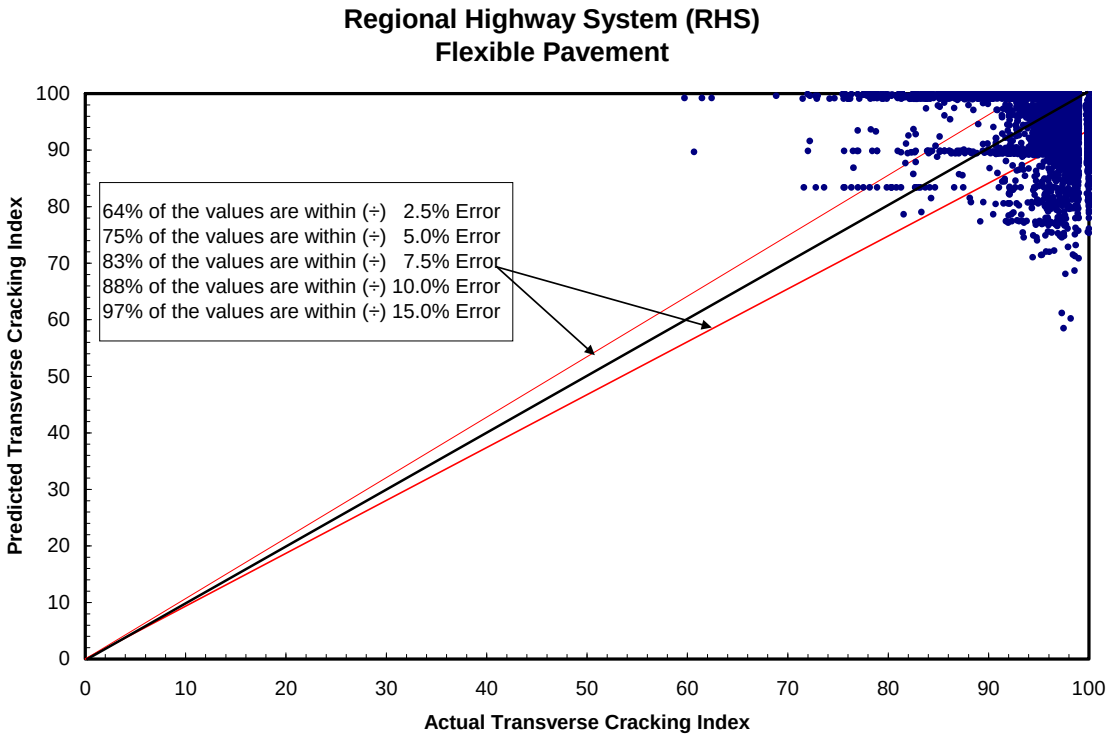


## RHS –Transverse Cracking Index_ASP

$$TCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_1$=1.30,and $b_1$=0.1,

| (+ -) %Error | % of data (11241) |
|---|---|
| 2.5 | 59 |
| 5 | 71 |
| 7.5 | 80 |
| 10 | 86 |
| 15 | 97 |

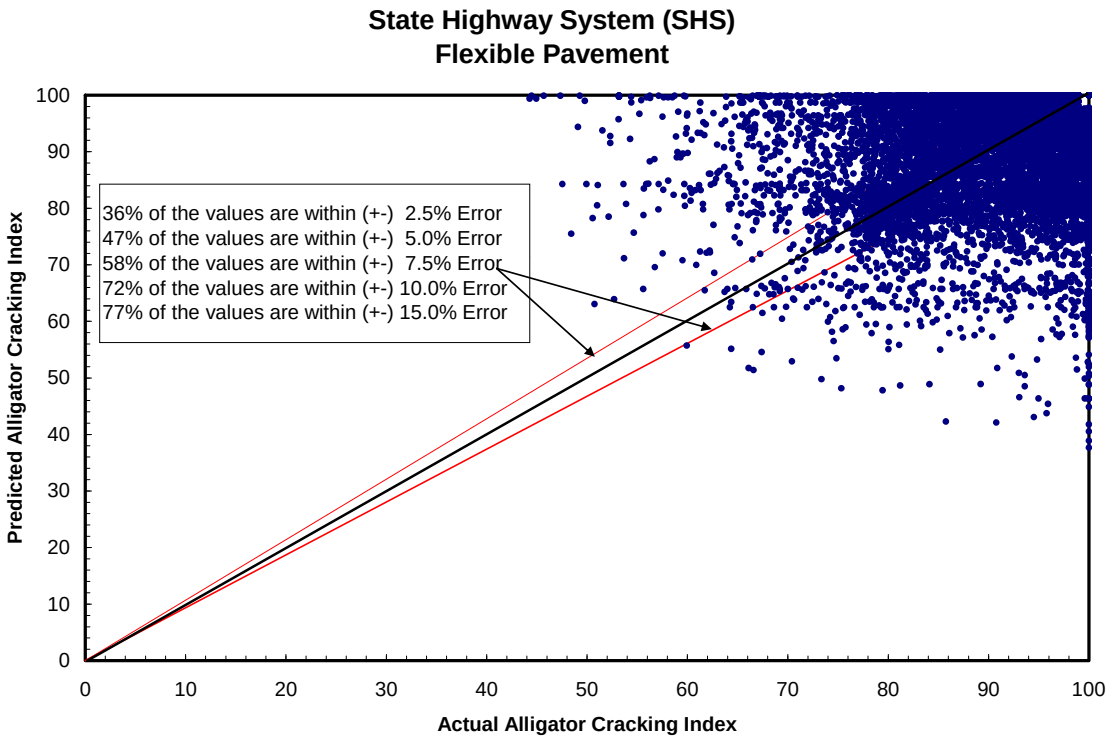


## SHS –Alligator Cracking Index_ASP

$$ACI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.50, $B_1$=0.135

| (+ -) Error | % of data (12736) |
|---|---|
| 2.5 | 36 |
| 5.0 | 47 |
| 7.5 | 58 |
| 10.0 | 68 |
| 15.0 | 77 |

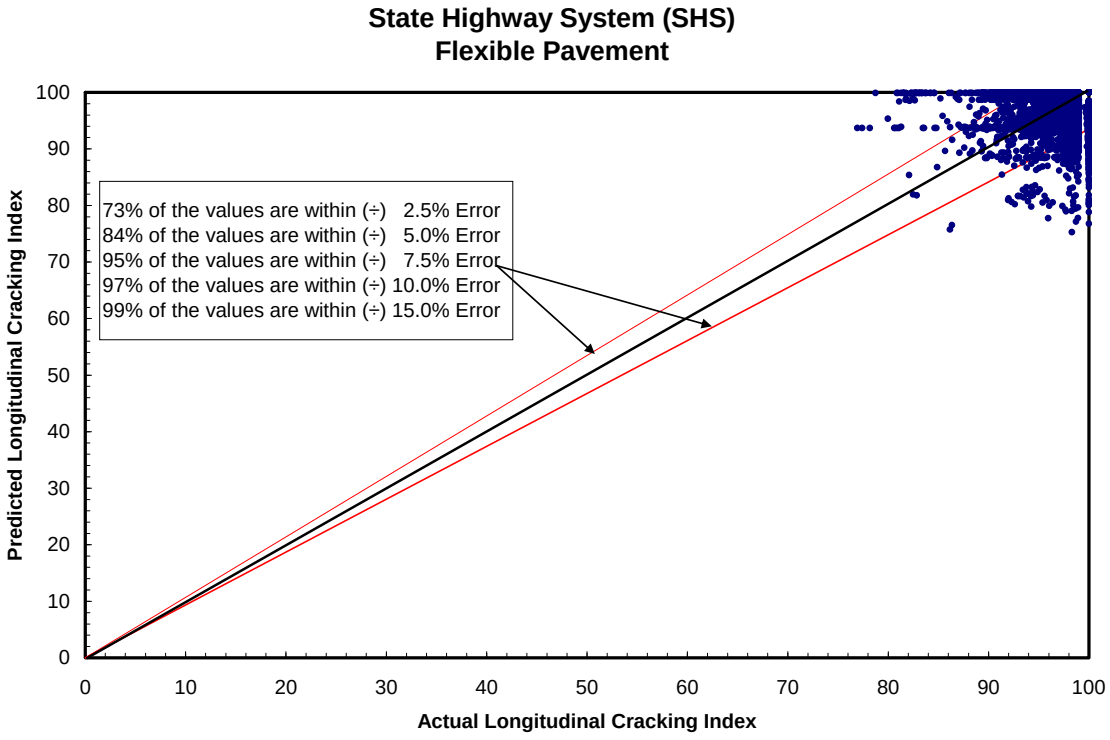


## SHS –Longitudinal Cracking Index_ASP

$$LCI = 100 - B_1 \left( t_A \right)^{a_{avg}}$$

$a_{avg}$=1.37, $B_1$=0.133

| (+ -) %Error | % of data (6685) |
|---|---|
| 2.5 | 67 |
| 5.0 | 80 |
| 7.5 | 94 |
| 10.0 | 97 |
| 15.0 | 99 |

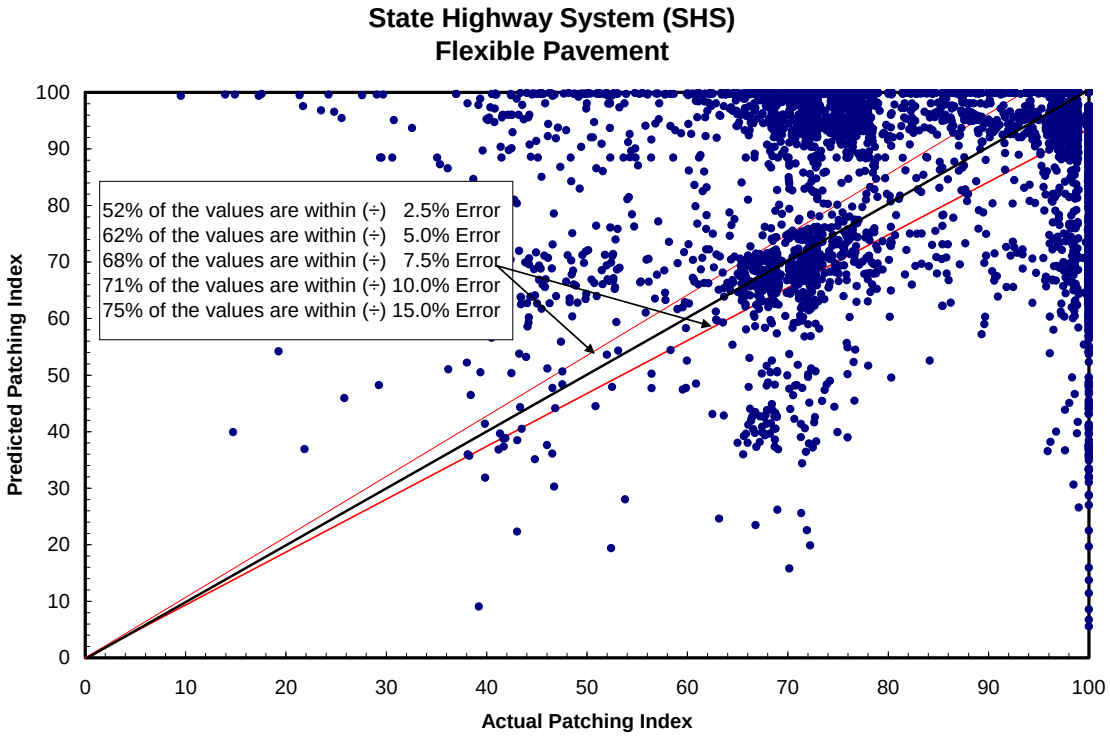


## SHS –Patching Index_ASP

$$PI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.61, $B_1$=0.1

| (+ -) %Error | % 0f data (9428) |
|---|---|
| 2.5 | 52 |
| 5.0 | 62 |
| 7.5 | 68 |
| 10.0 | 71 |
| 15.0 | 75 |

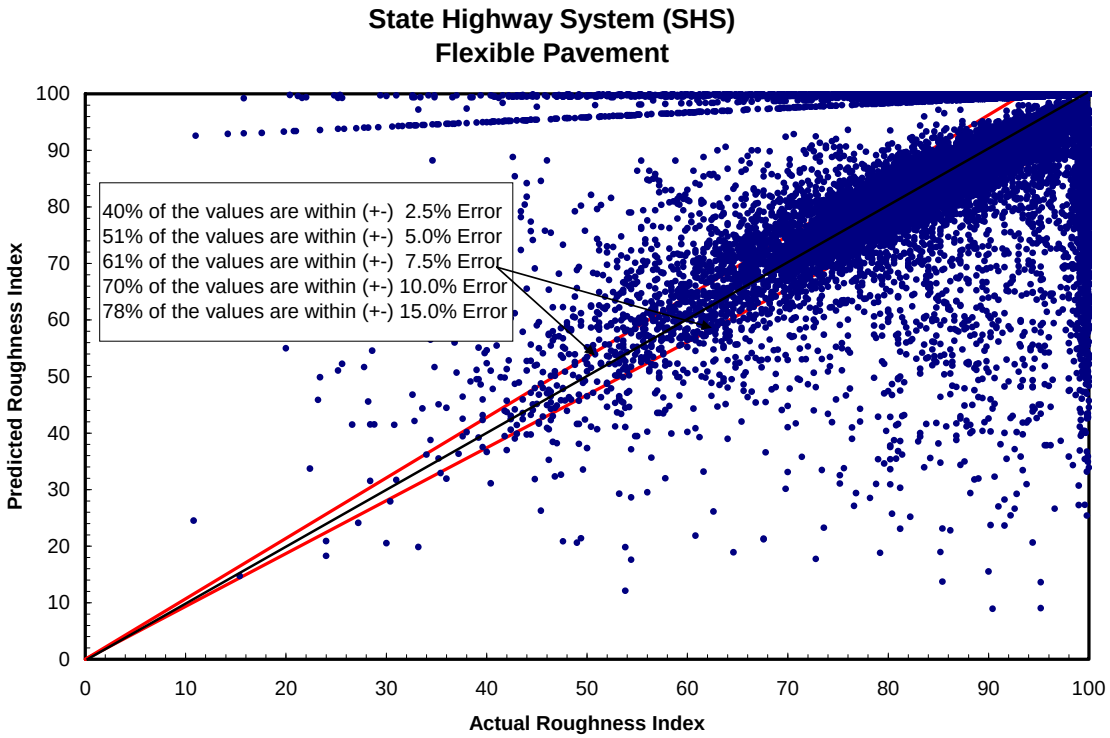


## SHS –Roughness Index_ASP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.1623, $b_1$=0.5486, and C= -0.3649

| (+ -) %Error | % 0f data (18914) |
|---|---|
| 2.5 | 40 |
| 5.0 | 52 |
| 7.5 | 61 |
| 10.0 | 69 |
| 15.0 | 78 |

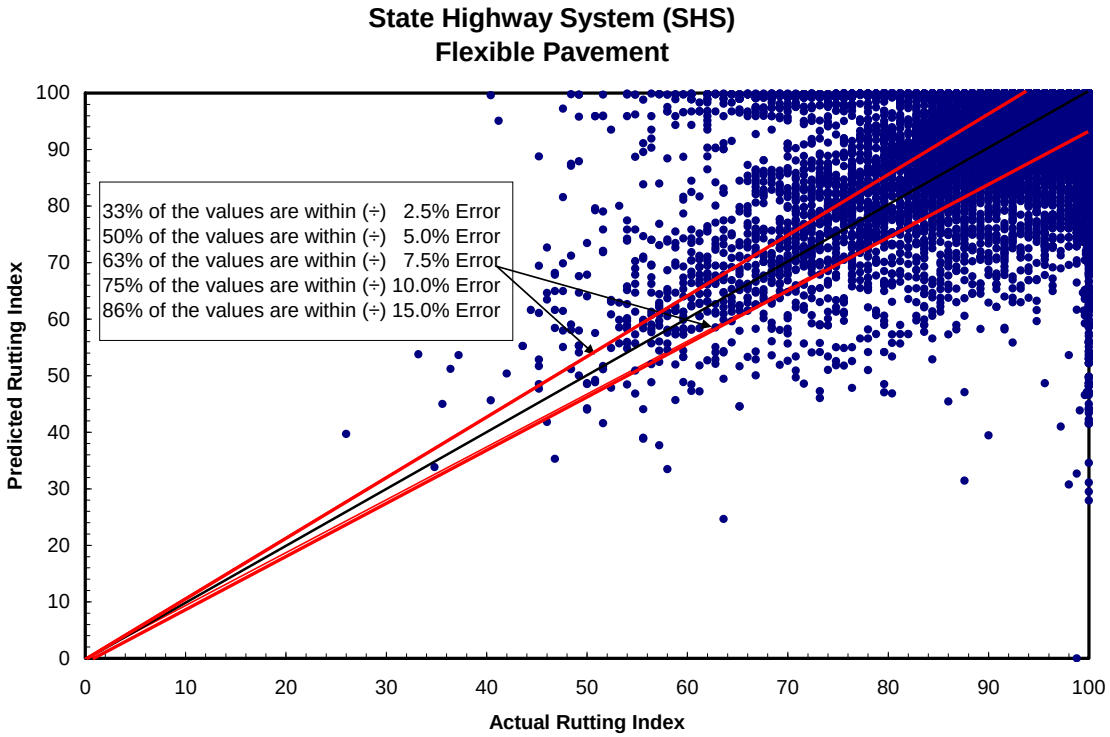


## SHS –Rutting Index_ASP

$$RTI = 100 - 10^{\left[b_1 (t_A)^{a1} \log(t_A) + C\right]}$$

$a_1$=0.28, $b_1$=0.57, and C= -1.0

| (+ -) %Error | % 0f data (11991) |
|---|---|
| 2.5 | 33 |
| 5.0 | 50 |
| 7.5 | 63 |
| 10.0 | 75 |
| 15.0 | 86 |

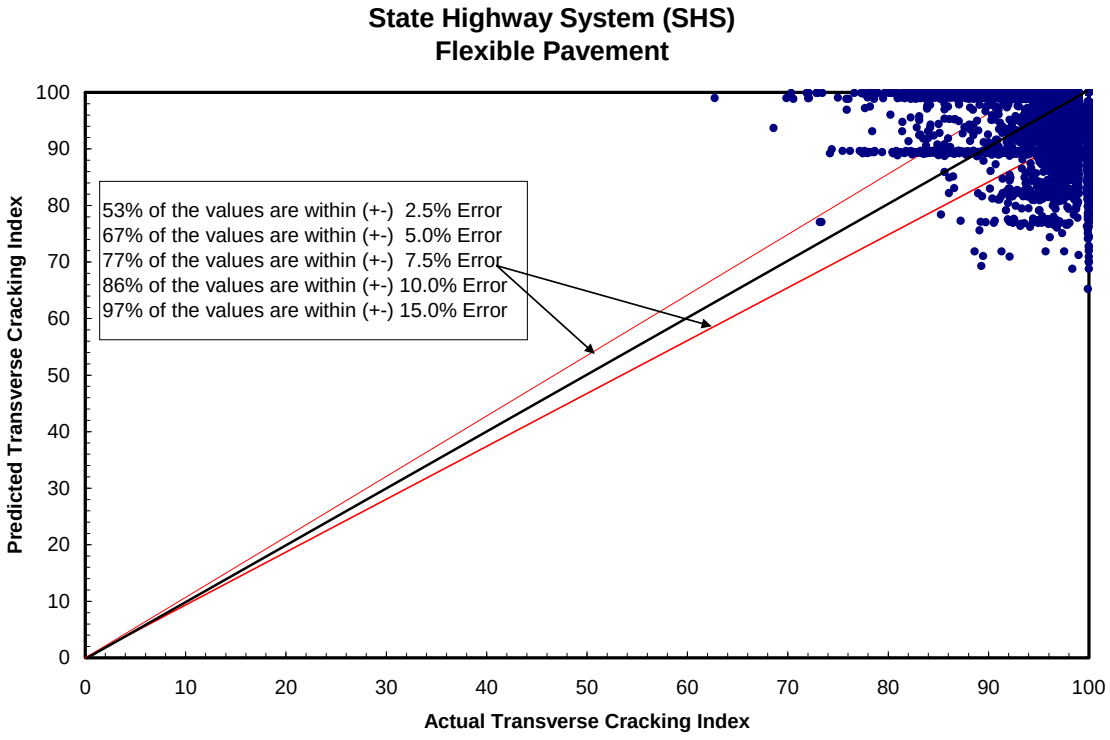


## SHS –Transverse Cracking Index_ASP

$$TCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.30, $B_1$=0.158

| (+ -) Error | % 0f data (13223) |
|---|---|
| 2.5 | 53 |
| 5.0 | 67 |
| 7.5 | 77 |
| 10.0 | 86 |
| 15.0 | 97 |



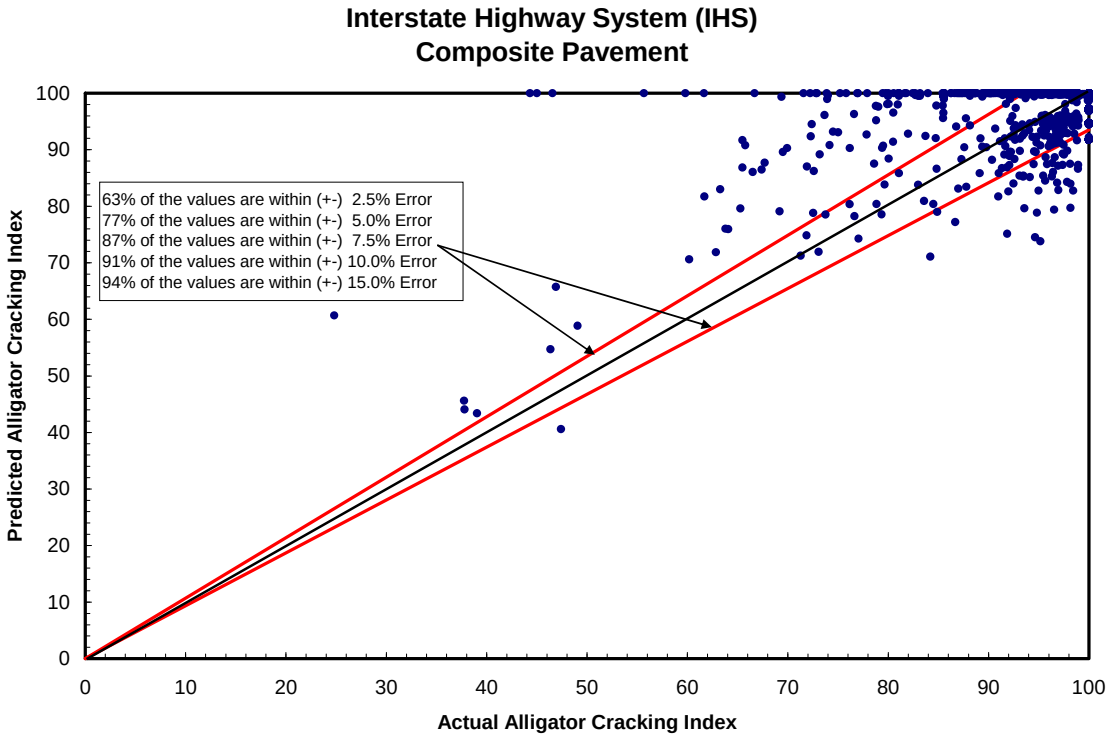
# Composite Pavements
# (COM)

## IHS –Alligator Index_COM

$$ACI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.37, $b_1$=0.462, and C= -1.355

| (+ -) %Error | % 0f data (2691) |
|---|---|
| 2.5 | 63 |
| 5.0 | 77 |
| 7.5 | 87 |
| 10.0 | 91 |
| 15.0 | 94 |

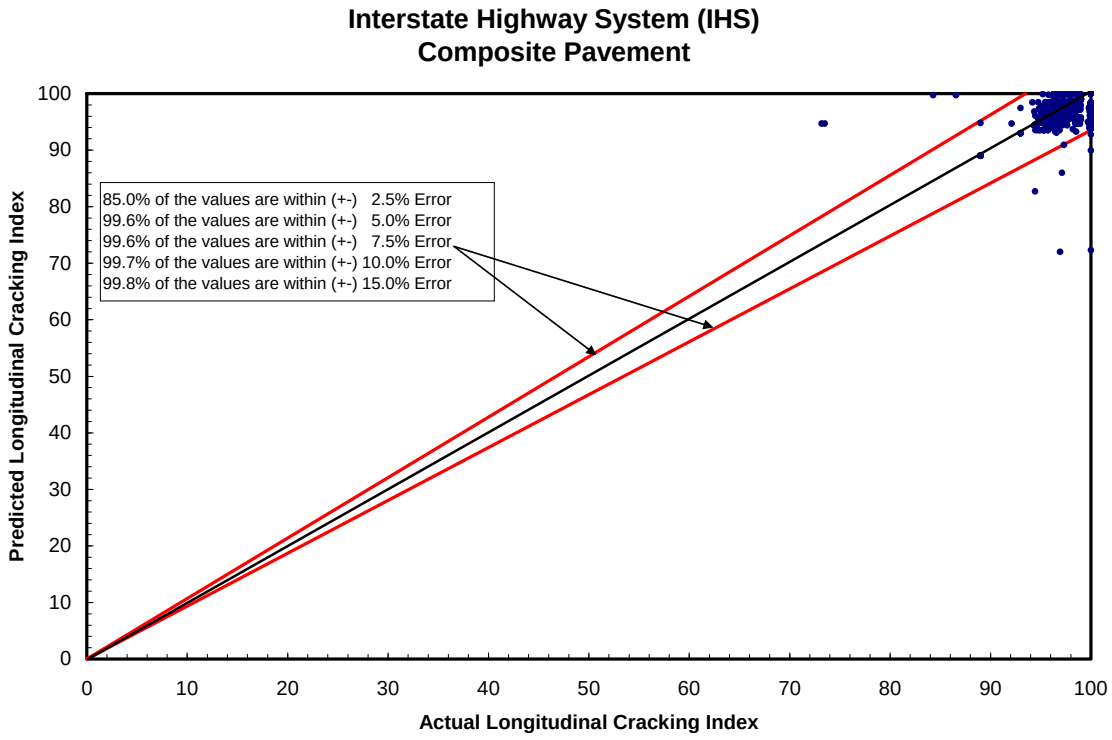


## IHS –Longitudinal Cracking Index_COMP

$$LCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.43, $B_1$=0.12

| (+ -) %Error | % 0f data (2928) |
|---|---|
| 2.5 | 85 |
| 5.0 | 99.6 |
| 7.5 | 99.7 |
| 10.0 | 99.8 |
| 15.0 | 100 |



**IHS –Patching Index_COMP**

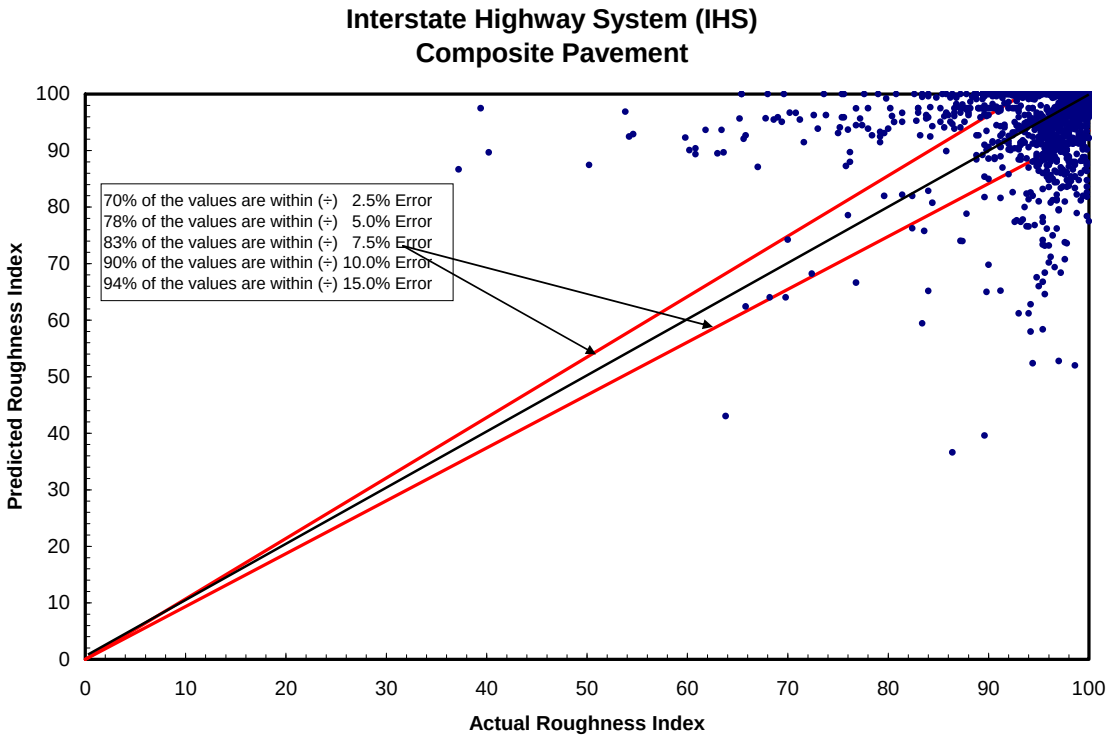
Insufficient Data

## IHS –Roughness Index_COMP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a1} \log(t_A) + C\right]}$$

$a_1$=0.13, $b_1$=0.78, and C= -0.60

| (+ -) Error | % 0f data (3170) |
|---|---|
| 2.5 | 70 |
| 5.0 | 78 |
| 7.5 | 83 |
| 10.0 | 90 |
| 15.0 | 94 |

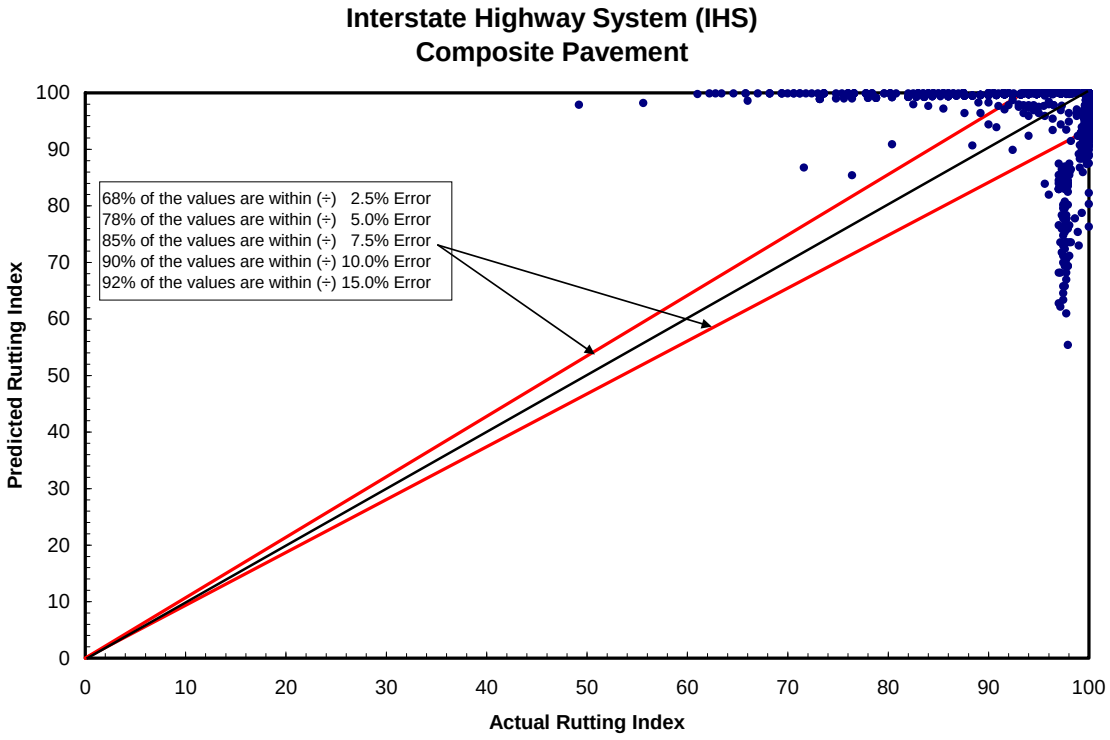


## IHS –Rutting Index_COMP

$$RTI = 100 - 10^{\left[b_1 (t_A)^{a1} \log(t_A) + C\right]}$$

$a_1$=0.20, $b_1$=0.90, and C= -1.5

| (+ -) %Error | % 0f data (2770) |
|---|---|
| 2.5 | 68 |
| 5.0 | 78 |
| 7.5 | 85 |
| 10.0 | 90 |
| 15.0 | 92 |

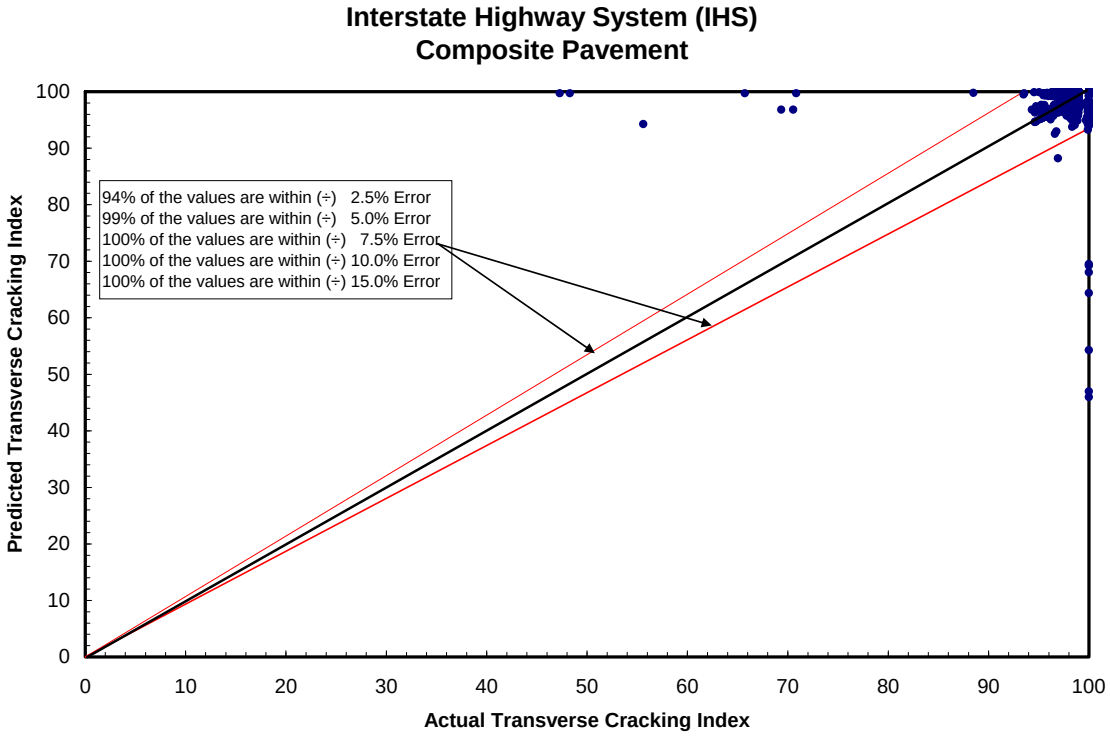


## IHS –Transverse Cracking Index_COMP

$$TCI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.17, $b_1$=0.85, and C= -1.15

| (+ -) Error | % of data (2772) |
|---|---|
| 2.5 | 93 |
| 5.0 | 99 |
| 7.5 | 99 |
| 10.0 | 99 |
| 15.0 | 99 |

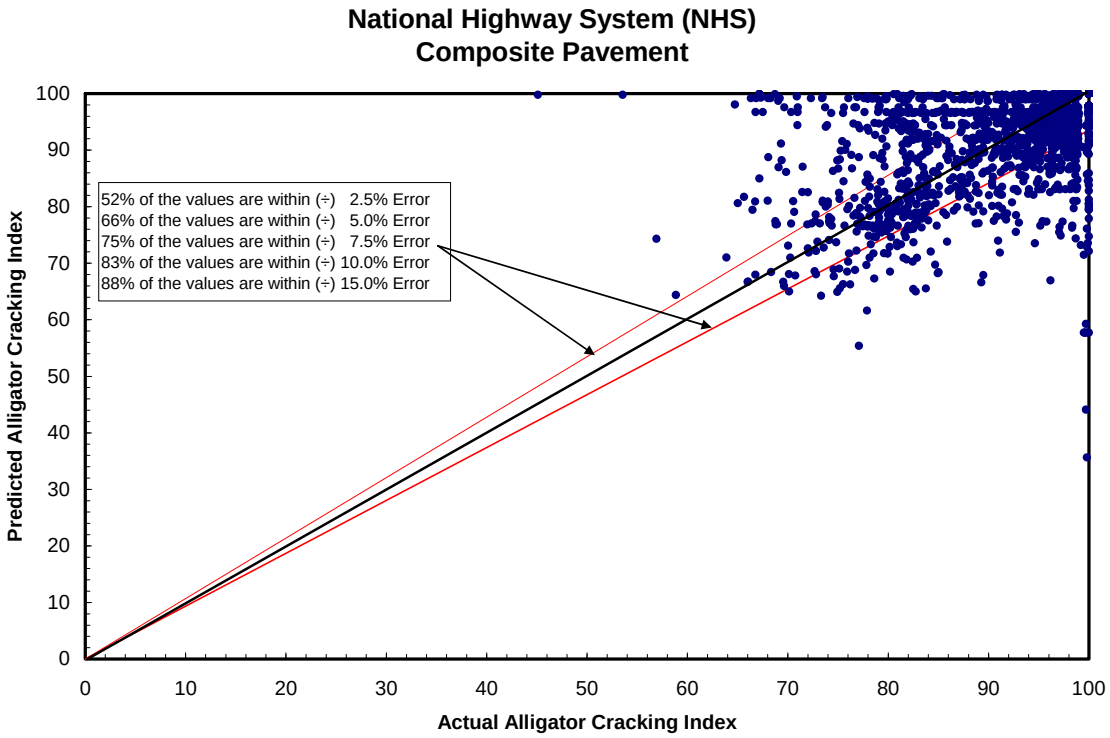


## NHS –Alligator Cracking Index_COMP

$$ACI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.60, $B_1$=0.10

| (+ -) Error | % 0f data (2724) |
|---|---|
| 2.5 | 52 |
| 5.0 | 66 |
| 7.5 | 75 |
| 10.0 | 83 |
| 15.0 | 88 |

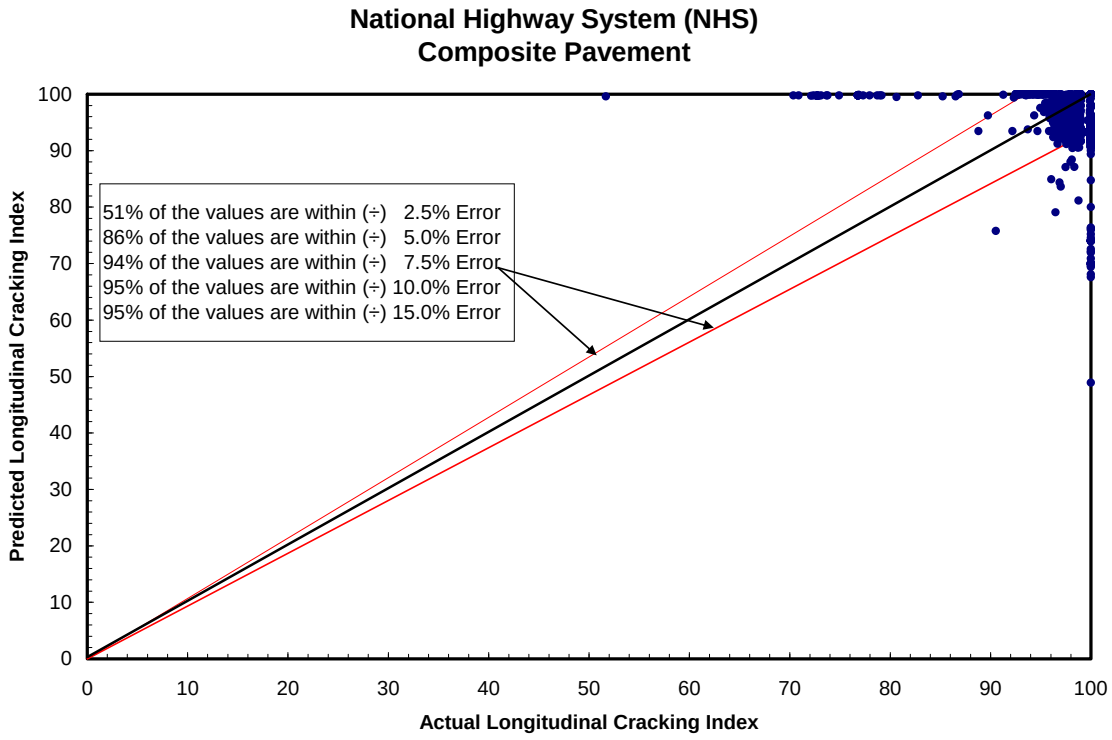


## NHS –Longitudinal Cracking Index_COMP

$$LCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.34, $B_1$=0.112

| (+ -) %Error | % 0f data (2200) |
|---|---|
| 2.5 | 51 |
| 5.0 | 86 |
| 7.5 | 94 |
| 10.0 | 95 |
| 15.0 | 95 |

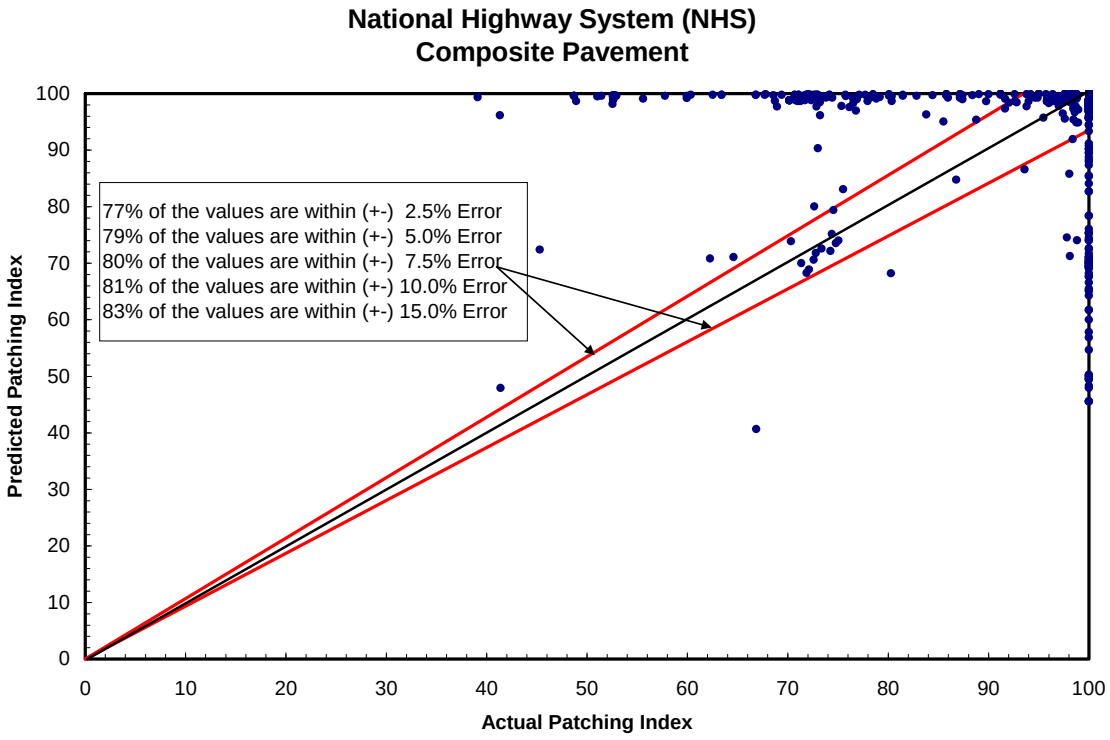


## NHS –Patching Index_COMP

$$PI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.57, $B_1$=0.045

| (+ -) %Error | % 0f data (2171) |
|---|---|
| 2.5 | 77 |
| 5.0 | 79 |
| 7.5 | 80 |
| 10.0 | 81 |
| 15.0 | 83 |

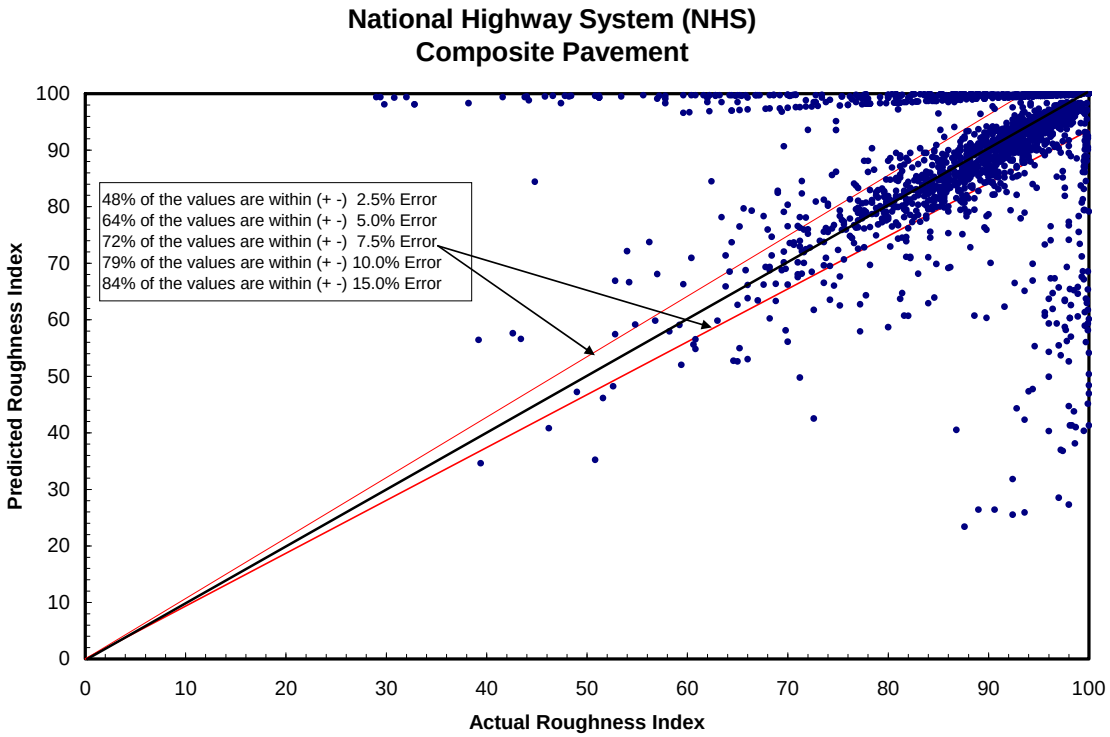


## NHS –Roughness Index_COMP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a1} \log(t_A) + C\right]}$$

$a_1$=0.2150, $b_1$=0.60, and C= -0.75

| (+ -) Error | % 0f data (2726) |
|---|---|
| 2.5 | 48 |
| 5.0 | 64 |
| 7.5 | 72 |
| 10.0 | 79 |
| 15.0 | 84 |

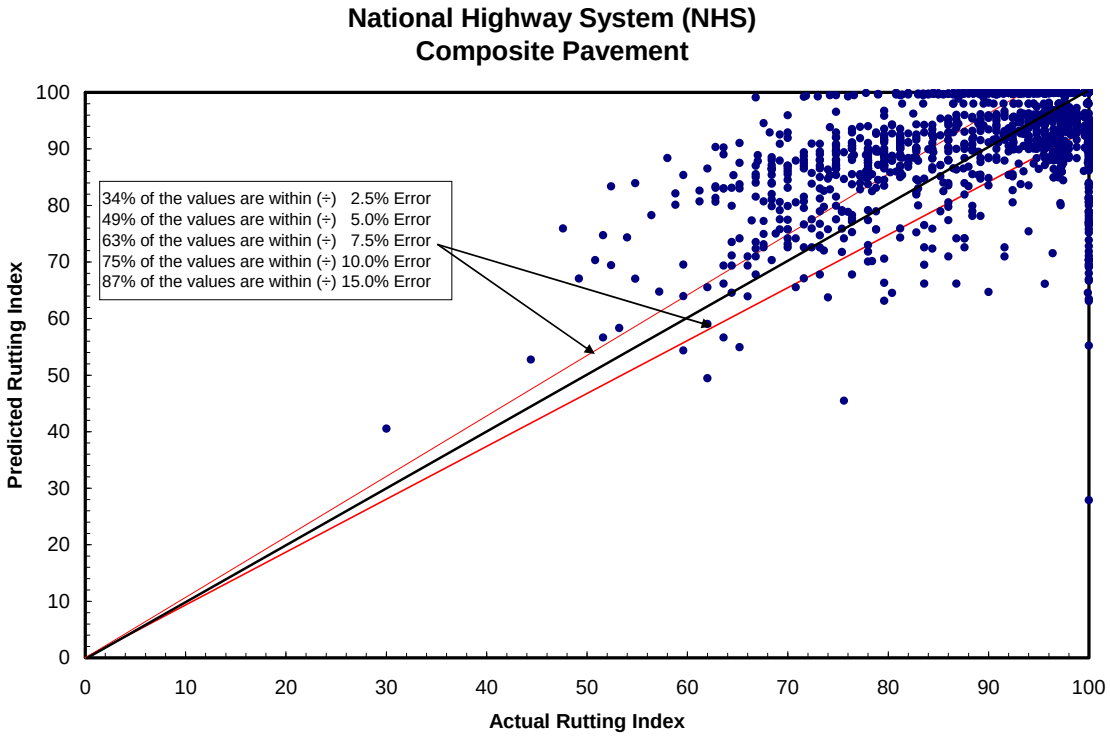


## NHS –Rutting Index_COMP

$$RTI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.40, $B_1$=0.20

| (+ -) %Error | % 0f data (2612) |
|---|---|
| 2.5 | 34 |
| 5.0 | 49 |
| 7.5 | 63 |
| 10.0 | 75 |
| 15.0 | 87 |

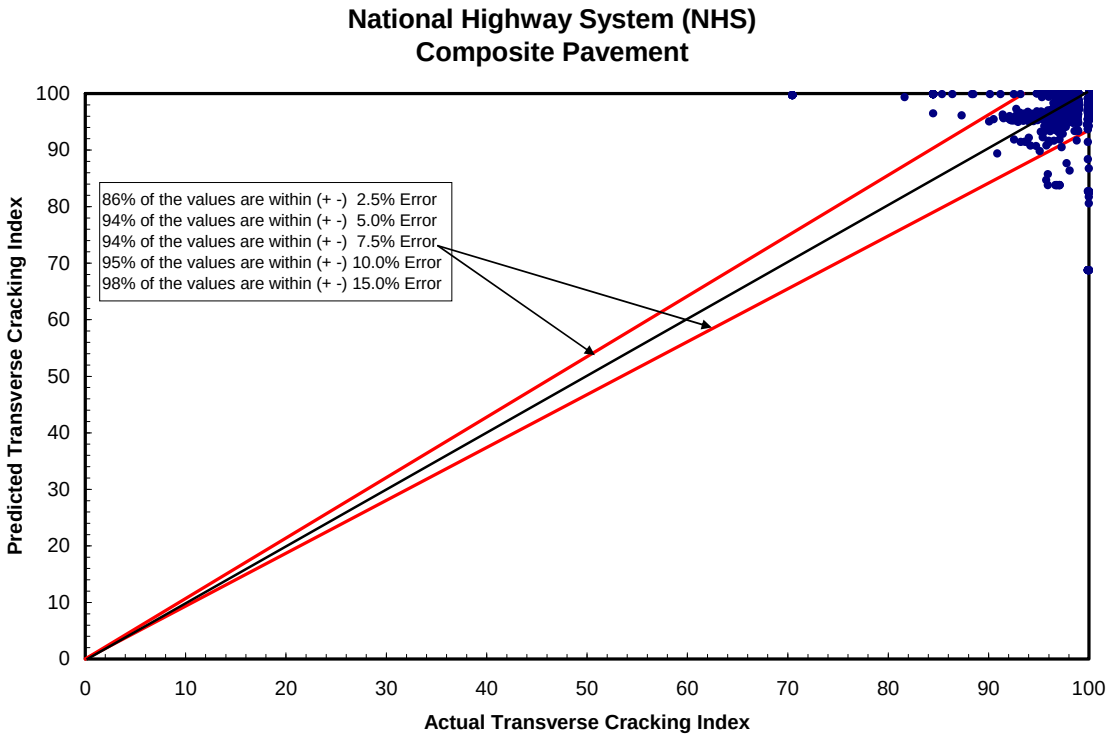


## NHS –Transverse Cracking Index_COMP

$$TCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.31, $B_1$=0.126

| (+ -) Error | % 0f data (2355) |
|---|---|
| 2.5 | 86 |
| 5.0 | 94 |
| 7.5 | 94 |
| 10.0 | 95 |
| 15.0 | 97 |

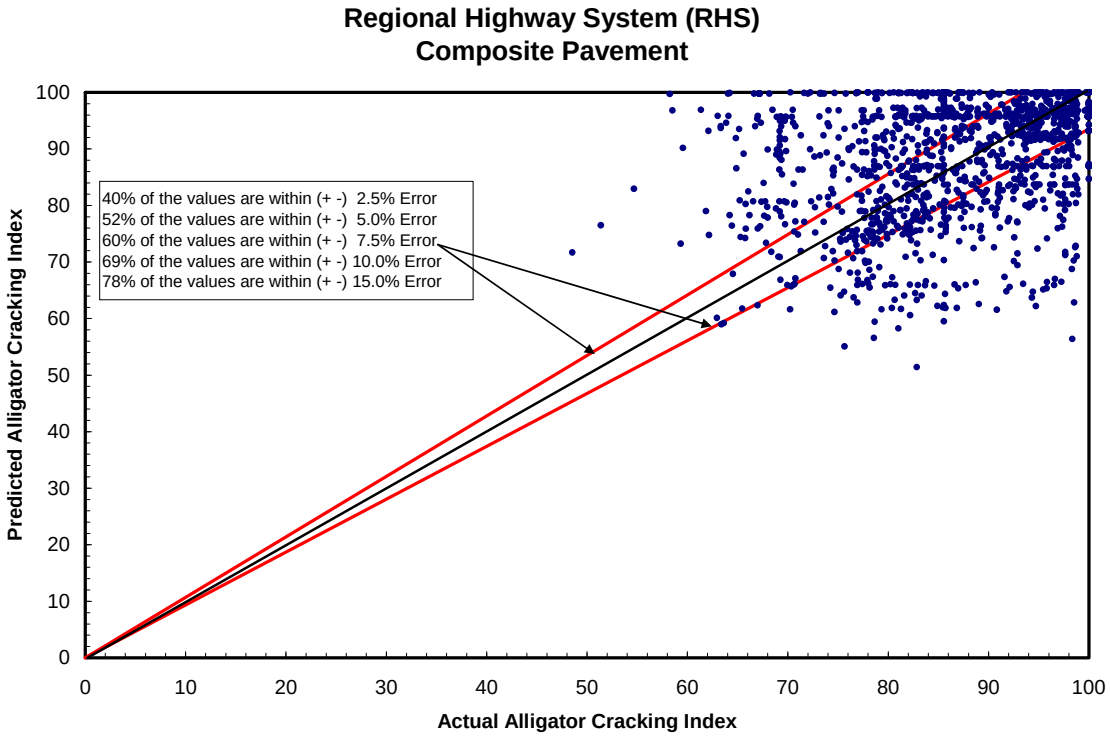


## RHS –Alligator Cracking Index_COMP

$$ACI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.51, $B_1$=0.159

| (+ -) Error | % 0f data (2333) |
|---|---|
| 2.5 | 40 |
| 5.0 | 52 |
| 7.5 | 60 |
| 10.0 | 69 |
| 15.0 | 78 |

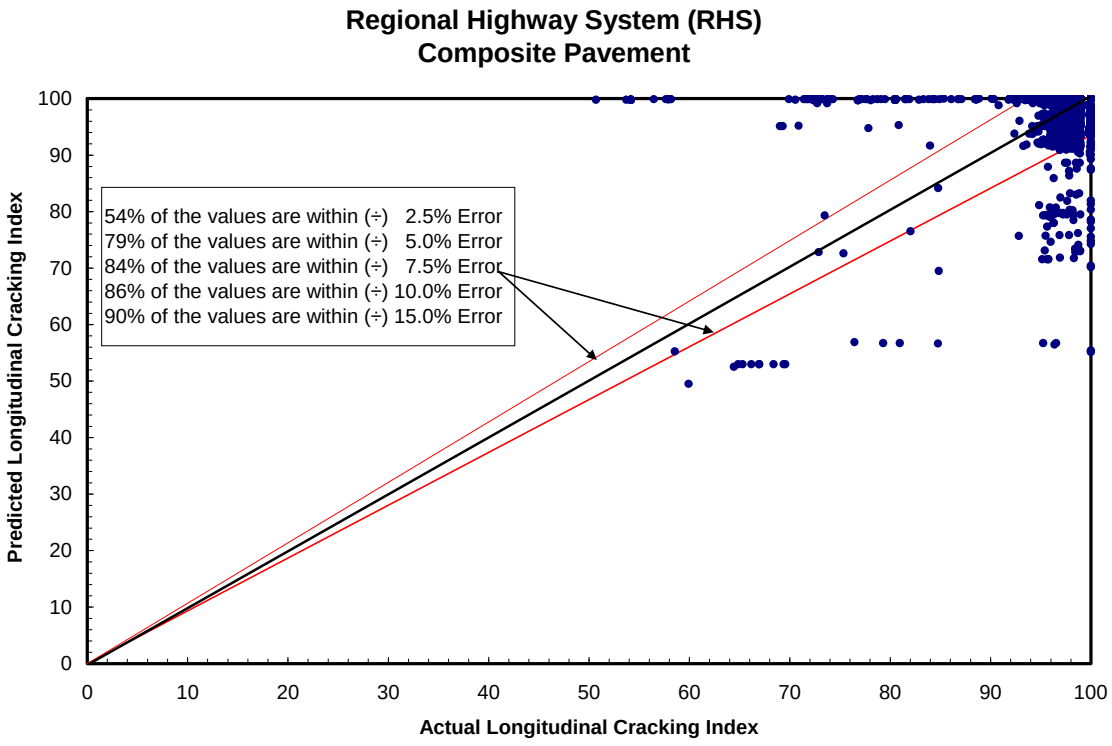


## RHS –Longitudinal Cracking Index_COMP

$$LCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.30, $B_1$= 0.141

| (+ -) %Error | % 0f data (2333) |
|---|---|
| 2.5 | 48 |
| 5.0 | 76 |
| 7.5 | 82 |
| 10.0 | 85 |
| 15.0 | 89 |

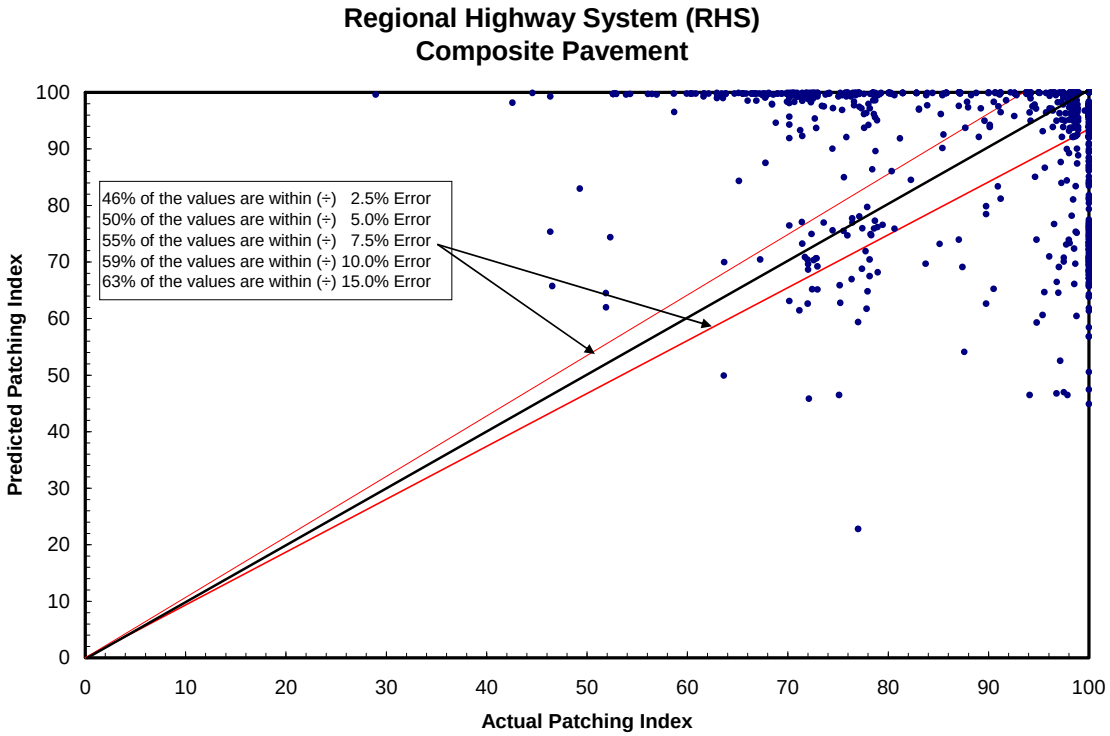


## RHS –Patching Index_COMP

$$PI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.55, $B_1$= 0.063

| (+ -) %Error | % 0f data (2019) |
|---|---|
| 2.5 | 46 |
| 5.0 | 50 |
| 7.5 | 55 |
| 10.0 | 59 |
| 15.0 | 63 |

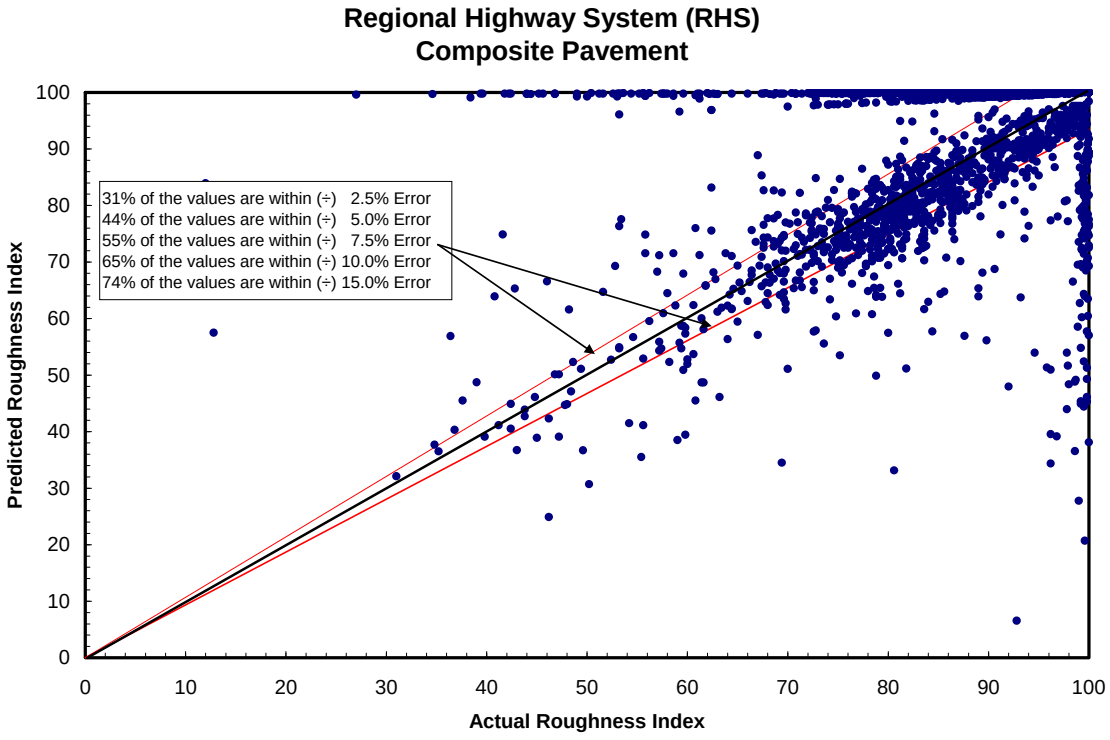


## RHS –Roughness Index_COMP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.125, $b_1$=0.64, and C= -0.10

| (+ -) Error | % 0f data (2230) |
|---|---|
| 2.5 | 31 |
| 5.0 | 44 |
| 7.5 | 55 |
| 10.0 | 65 |
| 15.0 | 74 |

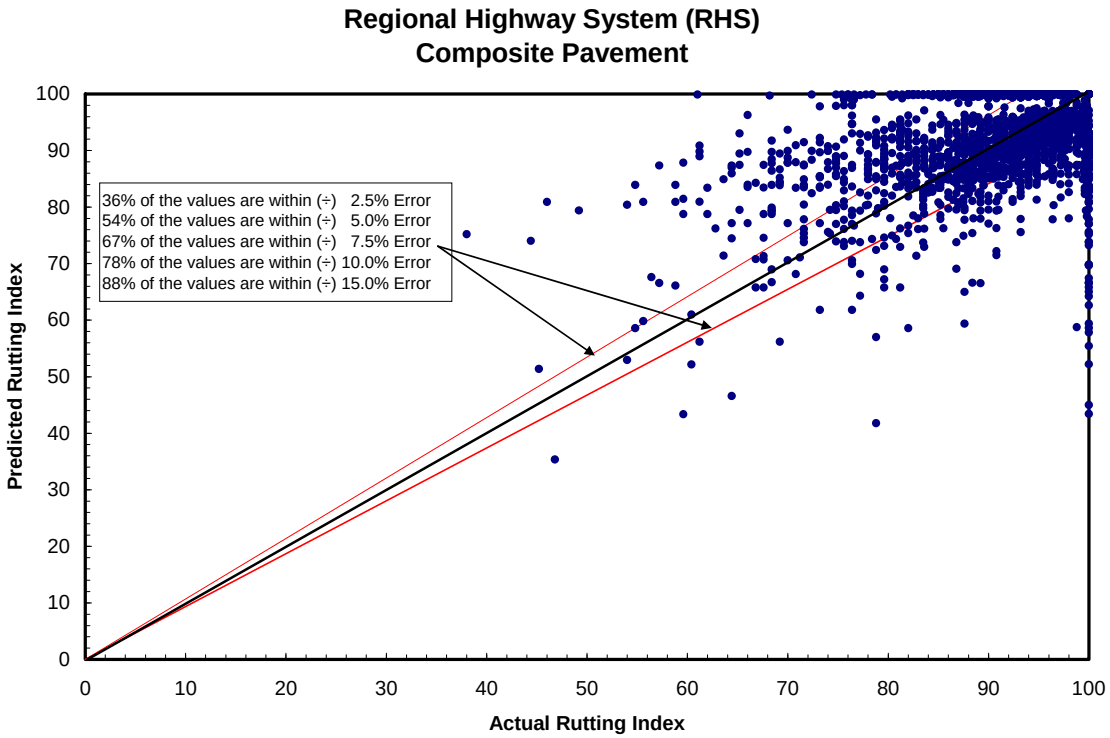


## RHS –Rutting Index_COMP

$$RTI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.35, $B_1$=0.159

| (+ -) %Error | % 0f data (2996) |
|---|---|
| 2.5 | 36 |
| 5.0 | 54 |
| 7.5 | 67 |
| 10.0 | 78 |
| 15.0 | 88 |

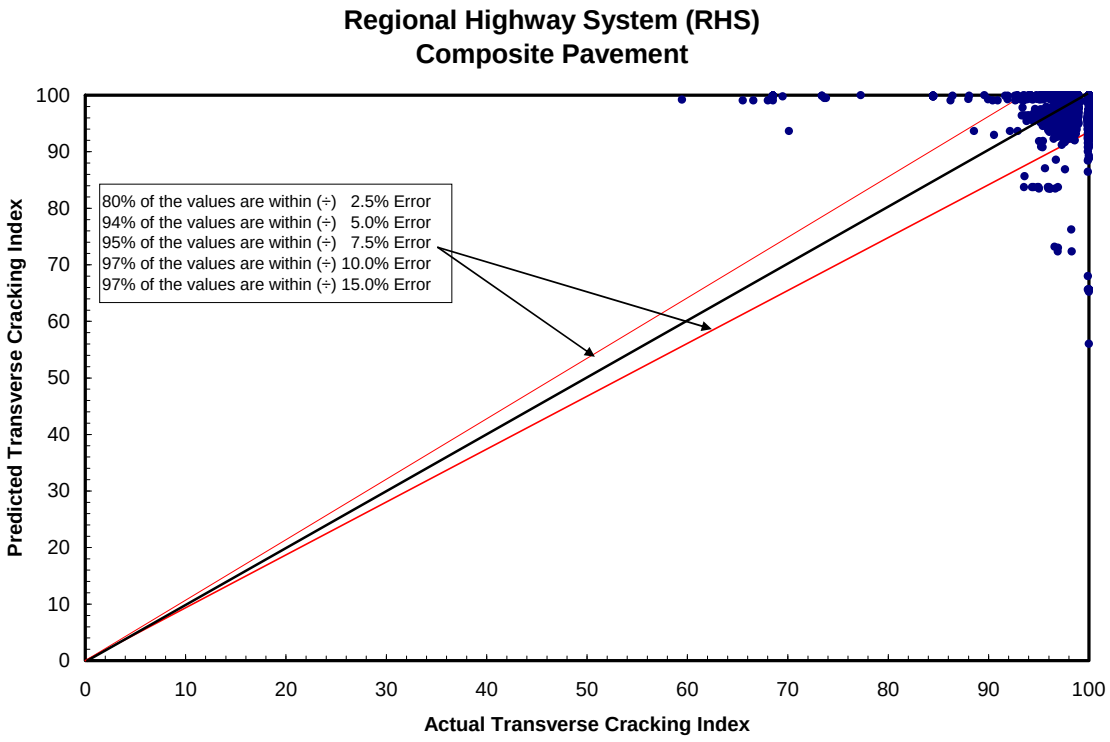


## RHS –Transverse Cracking Index_COMP

$$TCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.25, $B_1$=0.159

| (+ -) Error | % 0f data (2531) |
|---|---|
| 2.5 | 80 |
| 5.0 | 94 |
| 7.5 | 95 |
| 10.0 | 97 |
| 15.0 | 97 |

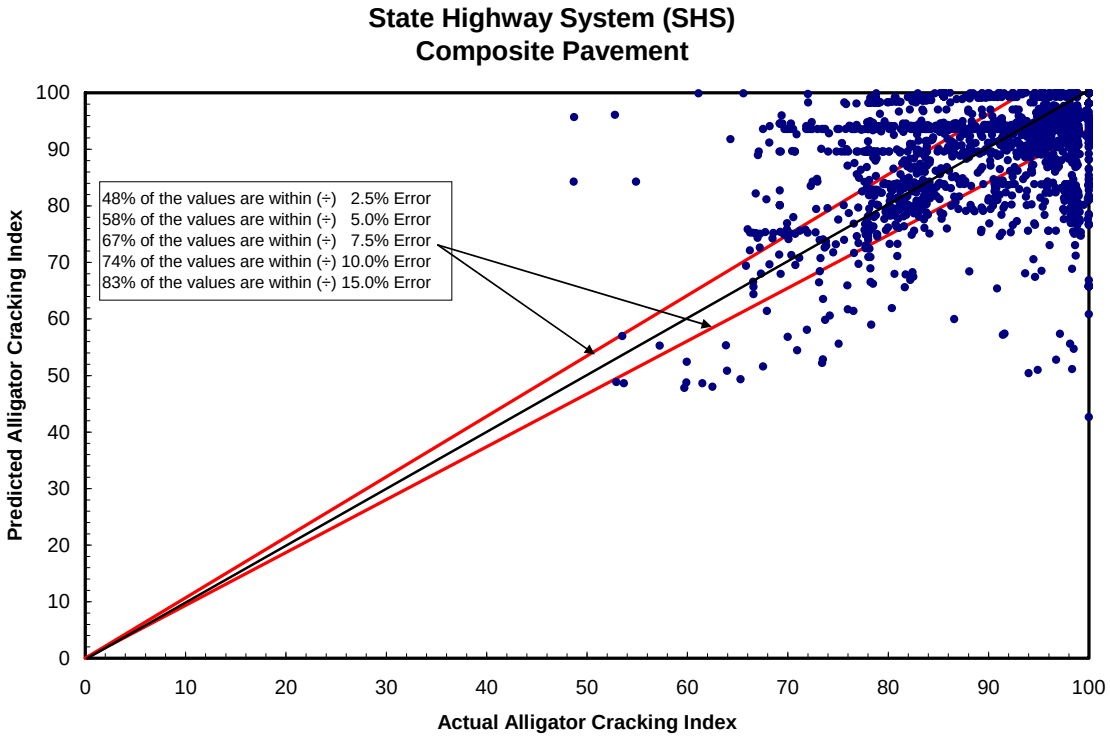


## SHS –Alligator Cracking Index_COMP

$$ACI = 100 - B_1 \left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.54, $B_1$=0.10

| (+ -) Error | % 0f data (3011) |
|---|---|
| 2.5 | 48 |
| 5.0 | 68 |
| 7.5 | 67 |
| 10.0 | 74 |
| 15.0 | 83 |

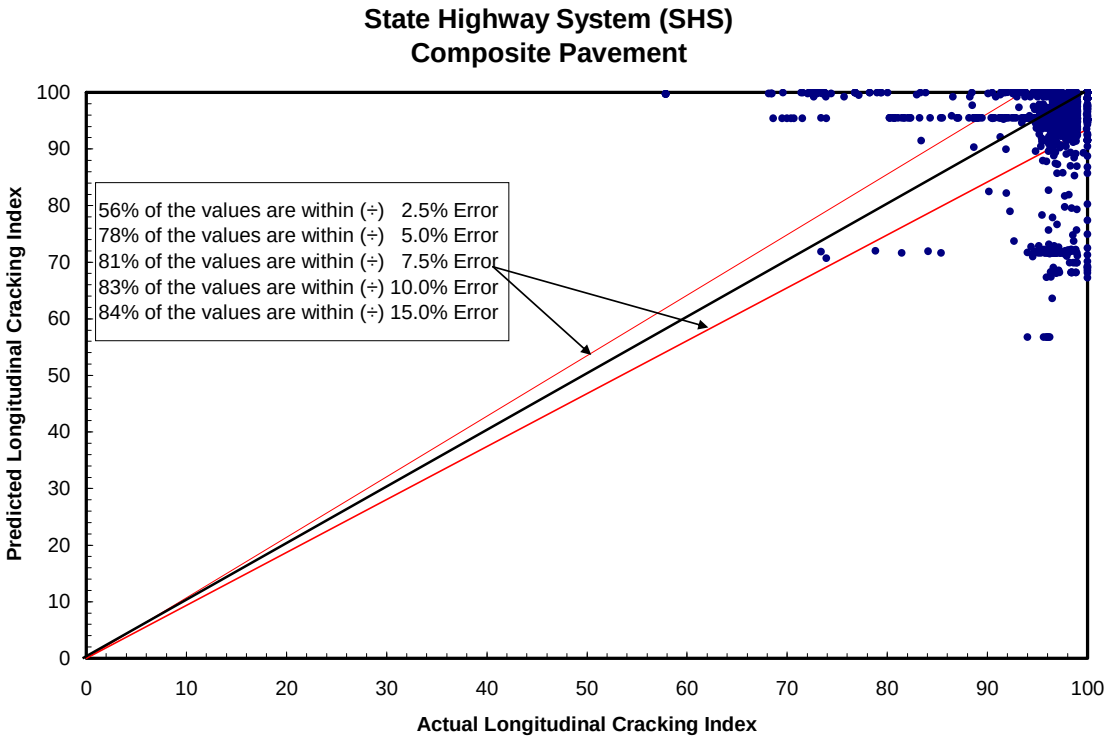


## SHS –Longitudinal Cracking Index_COMP

$$LCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.37, $B_1$=0.10

| (+ -) %Error | % 0f data (2833) |
|---|---|
| 2.5 | 56 |
| 5.0 | 78 |
| 7.5 | 81 |
| 10.0 | 83 |
| 15.0 | 84 |

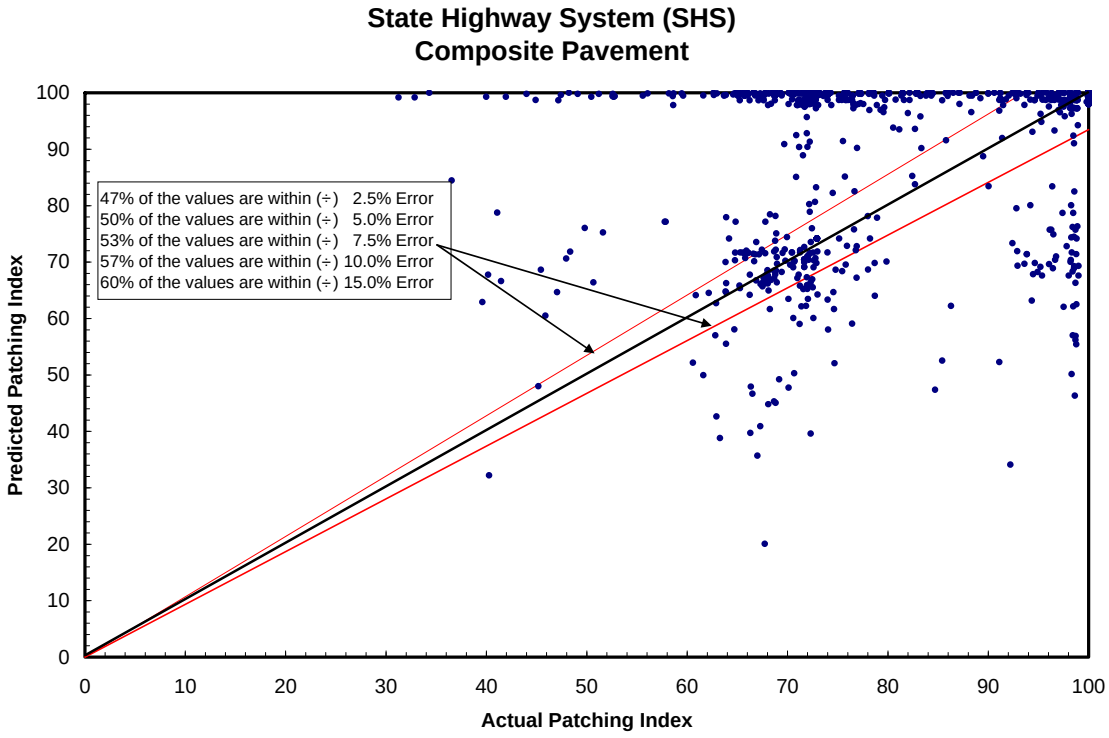


## SHS –Patching Index_COMP

$$PI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.58, $B_1$=0.0174

| (+ -) %Error | % 0f data (2129) |
|---|---|
| 2.5 | 47 |
| 5.0 | 50 |
| 7.5 | 53 |
| 10.0 | 57 |
| 15.0 | 60 |

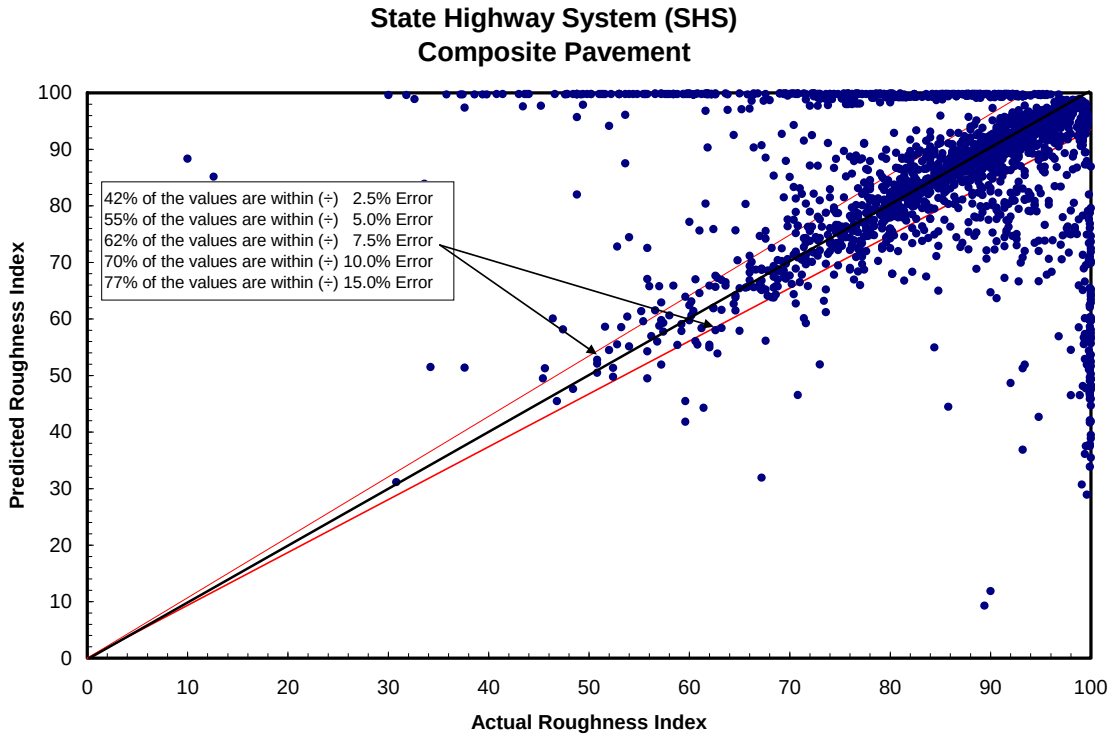


## SHS –Roughness Index_COMP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.10, $b_1$=0.72, and C= -0.50

| (+ -) Error | % 0f data (2839) |
|---|---|
| 2.5 | 42 |
| 5.0 | 55 |
| 7.5 | 62 |
| 10.0 | 70 |
| 15.0 | 77 |

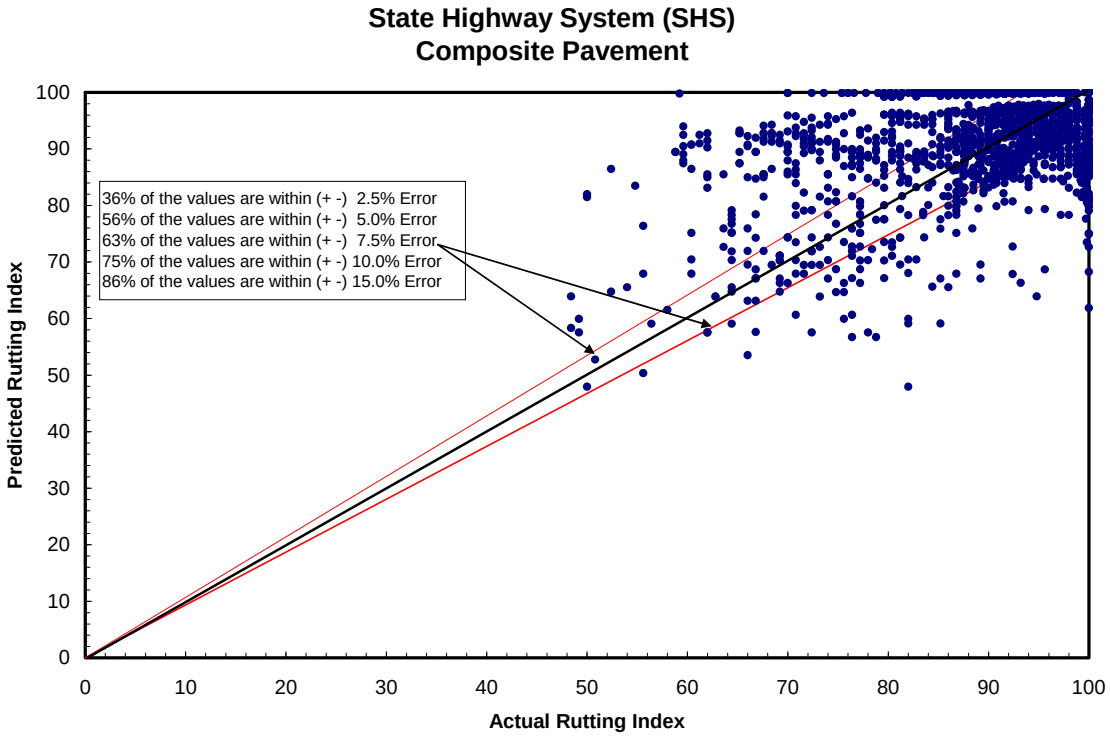


## SHS –Rutting Index_COMP

$$RTI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.35, $B_1$=0.126

| (+ -) %Error | % 0f data (2658) |
|---|---|
| 2.5 | 36 |
| 5.0 | 53 |
| 7.5 | 63 |
| 10.0 | 75 |
| 15.0 | 86 |

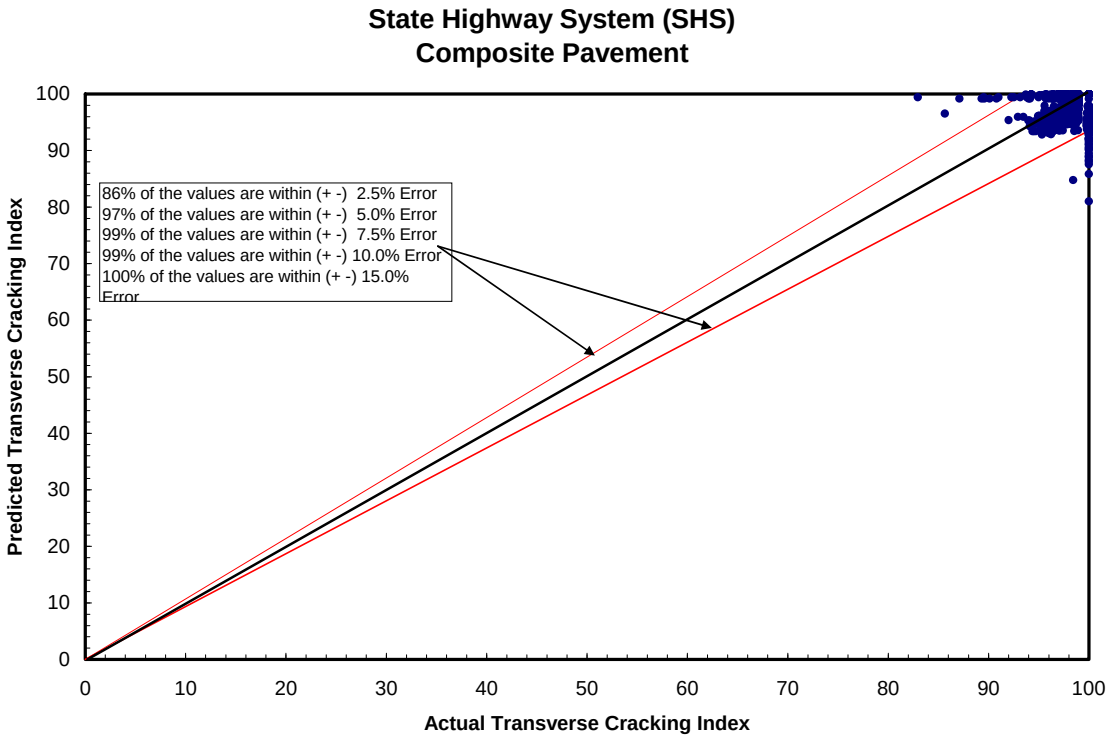


## SHS –Transverse Cracking Index_COMP

$$TCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.30, $B_1$=0.126

| (+ -) Error | % 0f data (2140) |
|---|---|
| 2.5 | 86 |
| 5.0 | 97 |
| 7.5 | 99 |
| 10.0 | 99 |
| 15.0 | 100 |



**IHS –Longitudinal Cracking Index_CRCP**

Insufficient Data

**IHS –Roughness Index_CRCP**

Insufficient Data

**IHS –Transverse Cracking Index_CRCP**

Insufficient Data

**NHS –Longitudinal Cracking Index_CRCP**

Insufficient Data

**NHS –Roughness Index_CRCP**

Insufficient Data

**NHS –Transverse Cracking Index_CRCP**

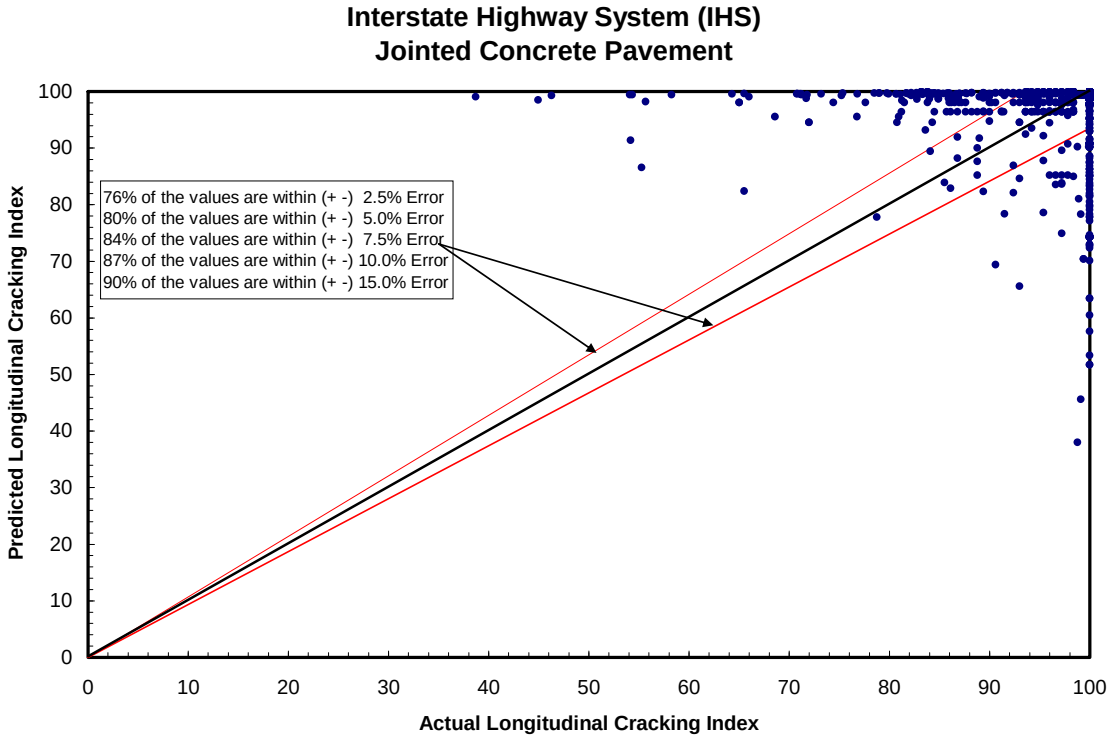
Insufficient Data

## IHS –Longitudinal Cracking Index_JCP

$$LCI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.15, $b_1$=1.0, and C= -1.0

| (+ -) %Error | % 0f data (2778) |
|---|---|
| 2.5 | 76 |
| 5.0 | 80 |
| 7.5 | 84 |
| 10.0 | 87 |
| 15.0 | 90 |

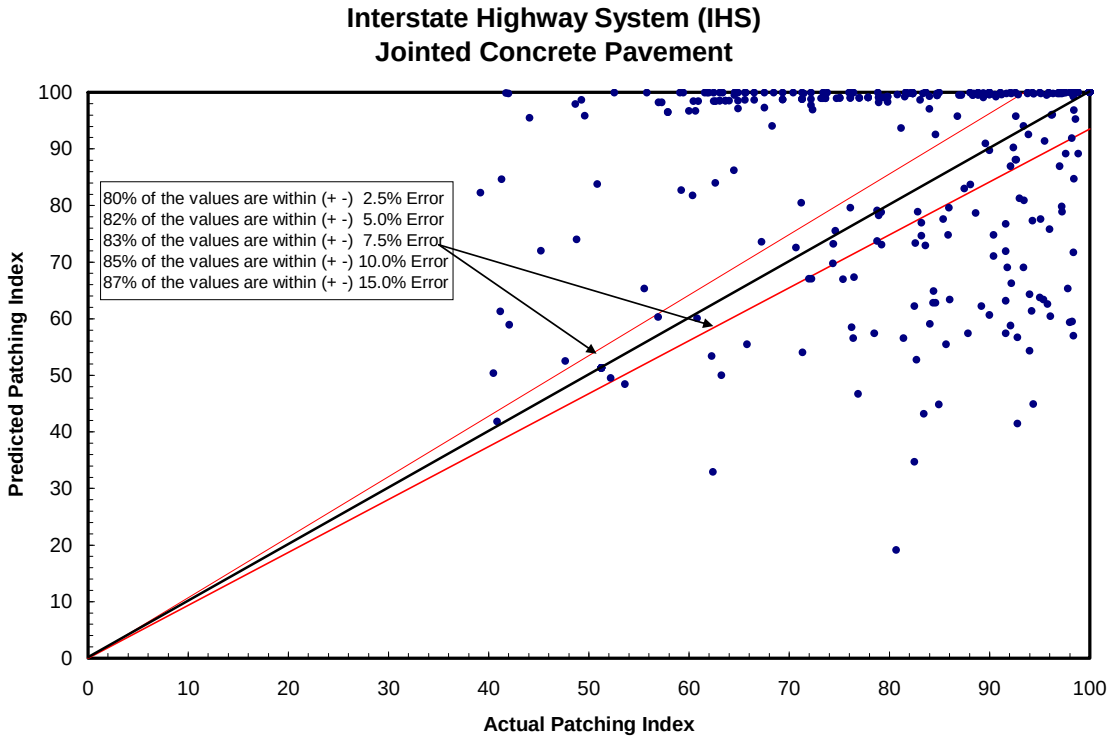


## IHS –Patching Index_JCP

$$PI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.25, $b_1$=0.75, and C= -1.50

| (+ -) %Error | % 0f data (2786) |
|---|---|
| 2.5 | 80 |
| 5.0 | 82 |
| 7.5 | 83 |
| 10.0 | 85 |
| 15.0 | 87 |

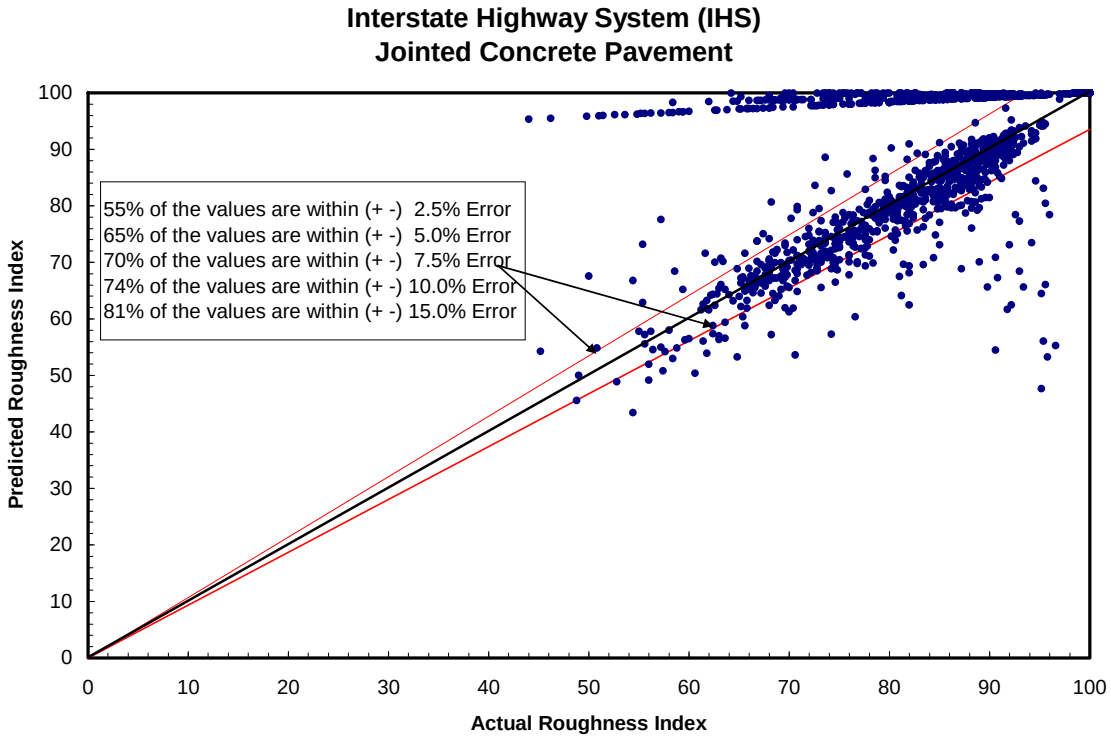


## IHS –Roughness Index_JCP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.24, $b_1$=0.50, and C= -0.398

| (+ -) Error | % 0f data (2243) |
|---|---|
| 2.5 | 55 |
| 5.0 | 65 |
| 7.5 | 70 |
| 10.0 | 74 |
| 15.0 | 81 |

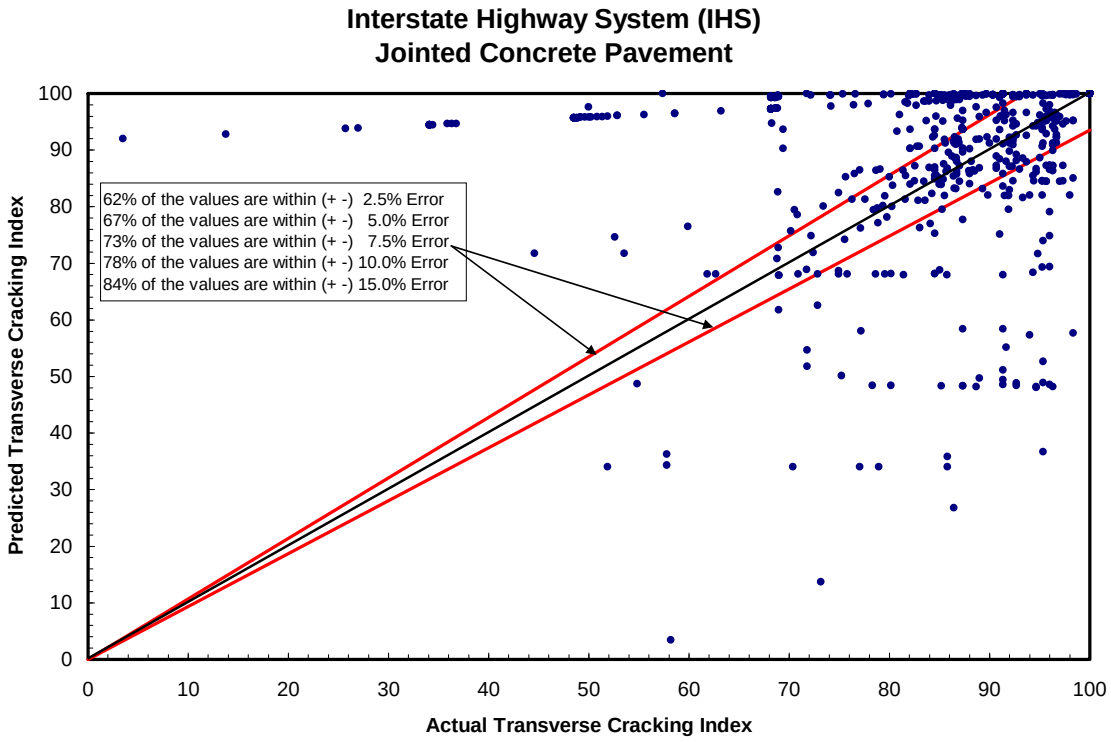


## IHS –Transverse Cracking Index_JCP

$$TCI = 100 - 10^{\left[b_1 (t_A)^{a1} \log(t_A) + C\right]}$$

$a_1$=0.15, $b_1$=0.50, and C= -1.0

| (+ -) Error | % 0f data (2230) |
|---|---|
| 2.5 | 62 |
| 5.0 | 67 |
| 7.5 | 73 |
| 10.0 | 78 |
| 15.0 | 84 |

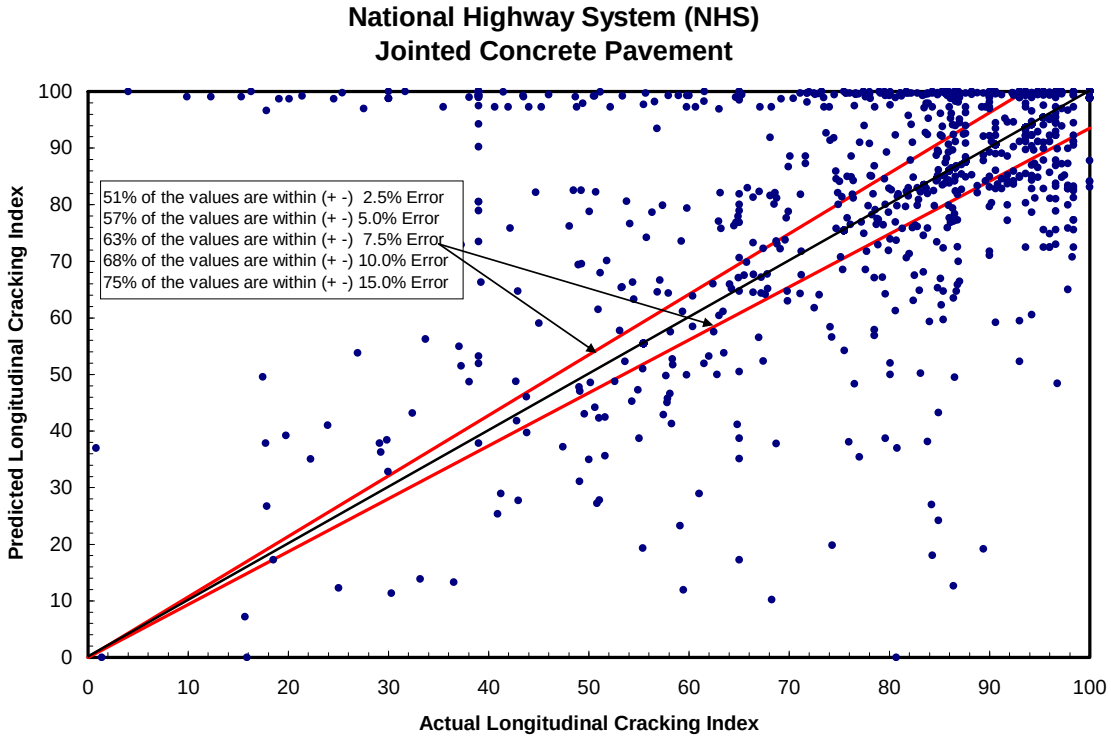


## NHS –Longitudinal Cracking Index_JCP

$$LCI = 100 - 10^{\left[b_1 (t_A)^{a1} \log(t_A) + C\right]}$$

$a_1$=0.28, $b_1$=0.54, and C= -0.89

| (+ -) %Error | % 0f data (2229) |
|---|---|
| 2.5 | 51 |
| 5.0 | 57 |
| 7.5 | 63 |
| 10.0 | 68 |
| 15.0 | 75 |

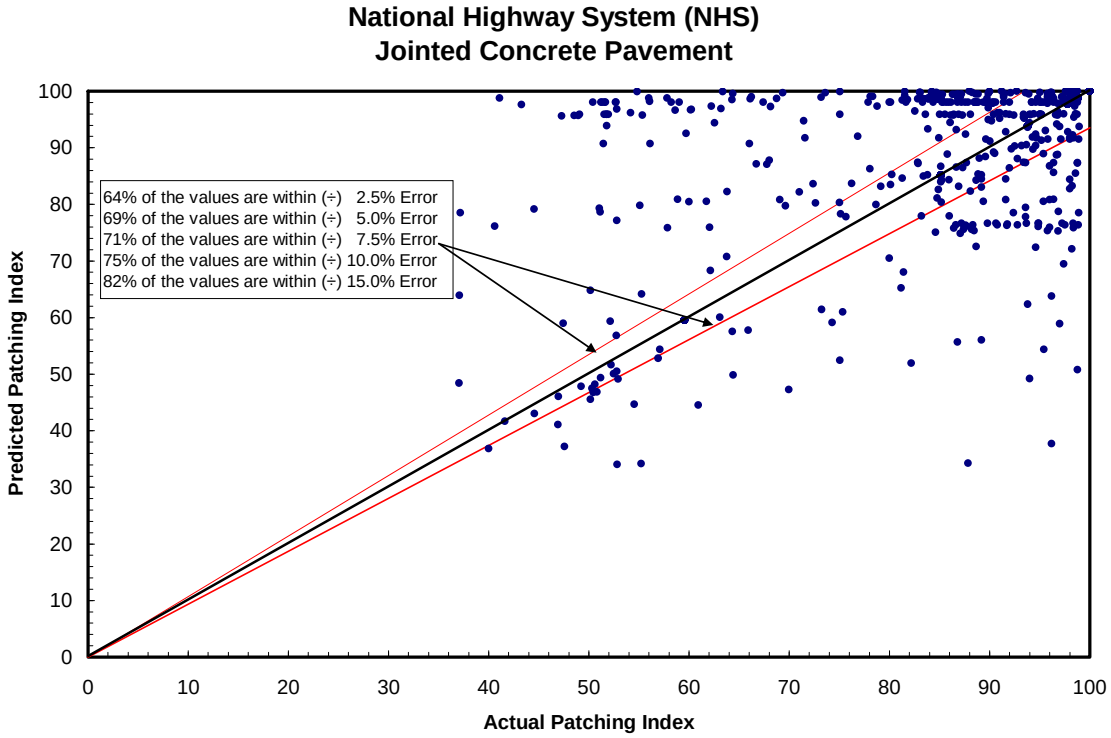


## NHS –Patching Index_JCP

$$PI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.57, $B_1$=0.106

| (+ -) %Error | % 0f data (1872) |
|---|---|
| 2.5 | 64 |
| 5.0 | 69 |
| 7.5 | 71 |
| 10.0 | 75 |
| 15.0 | 82 |

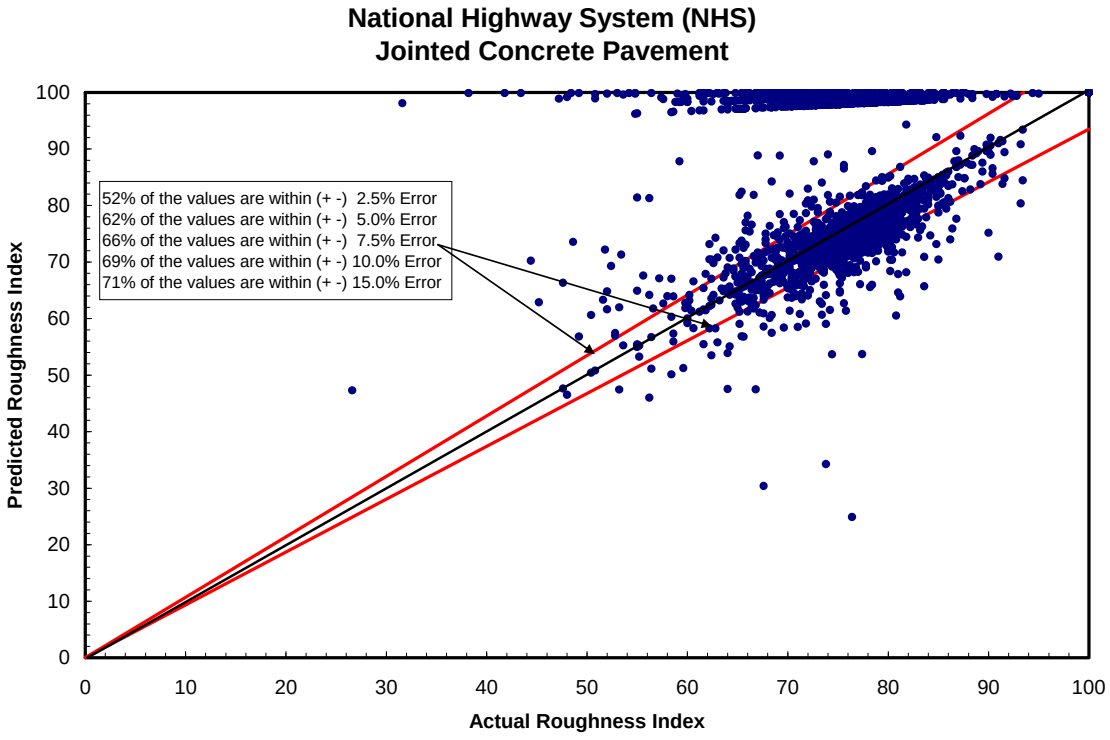


**NHS –Roughness Index_JCP**

$$LCI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.12, $b_1$=0.60, and C= -0.30

| (+ -) Error | % 0f data (3459) |
|---|---|
| 2.5 | 52 |
| 5.0 | 62 |
| 7.5 | 66 |
| 10.0 | 69 |
| 15.0 | 71 |

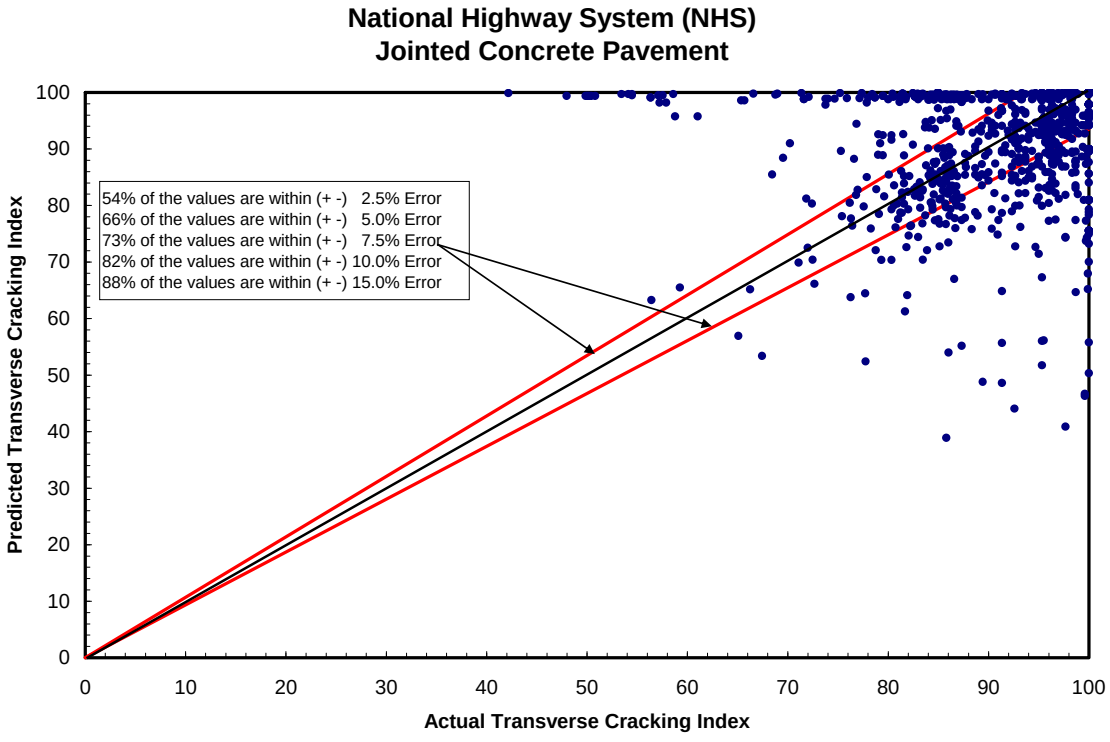


## NHS –Transverse Cracking Index_JCP

$$LCI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.12, $b_1$=1.0, and C= -0.95

| (+ -) Error | % 0f data (1948) |
|---|---|
| 2.5 | 54 |
| 5.0 | 66 |
| 7.5 | 73 |
| 10.0 | 82 |
| 15.0 | 88 |

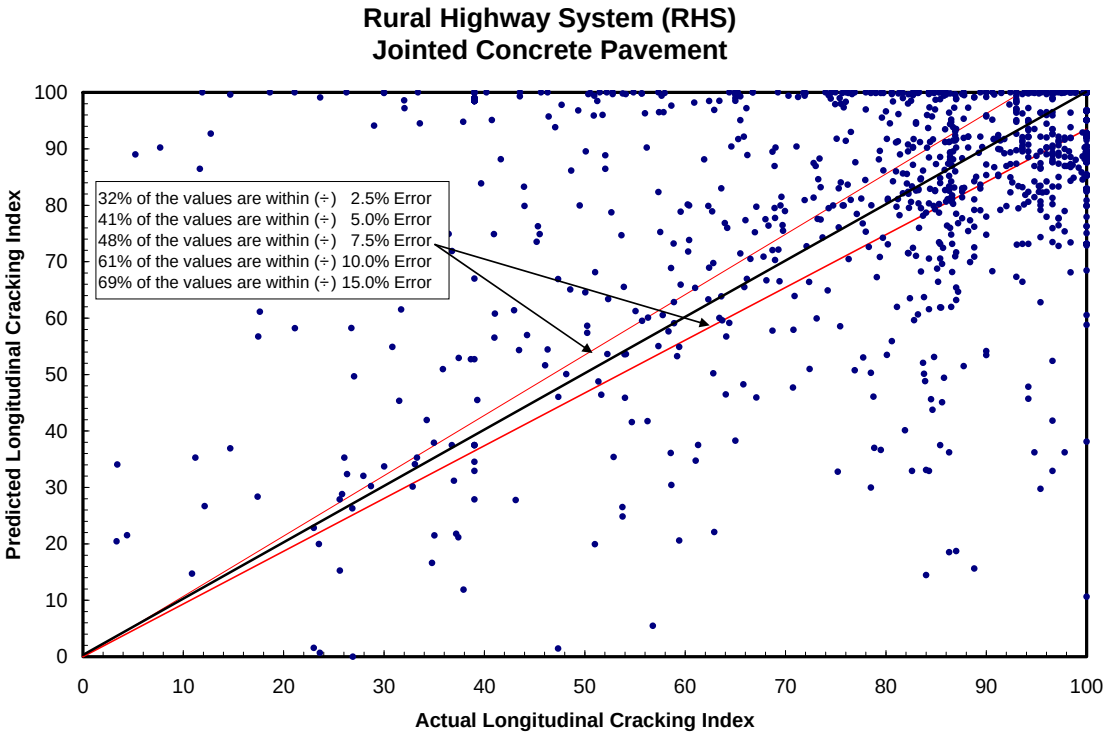


## RHS –Longitudinal Cracking Index_JCP

$$LCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.57, $B_1$=0.1741

| (+ -) %Error | % 0f data (2025) |
|---|---|
| 2.5 | 32 |
| 5.0 | 41 |
| 7.5 | 48 |
| 10.0 | 61 |
| 15.0 | 69 |

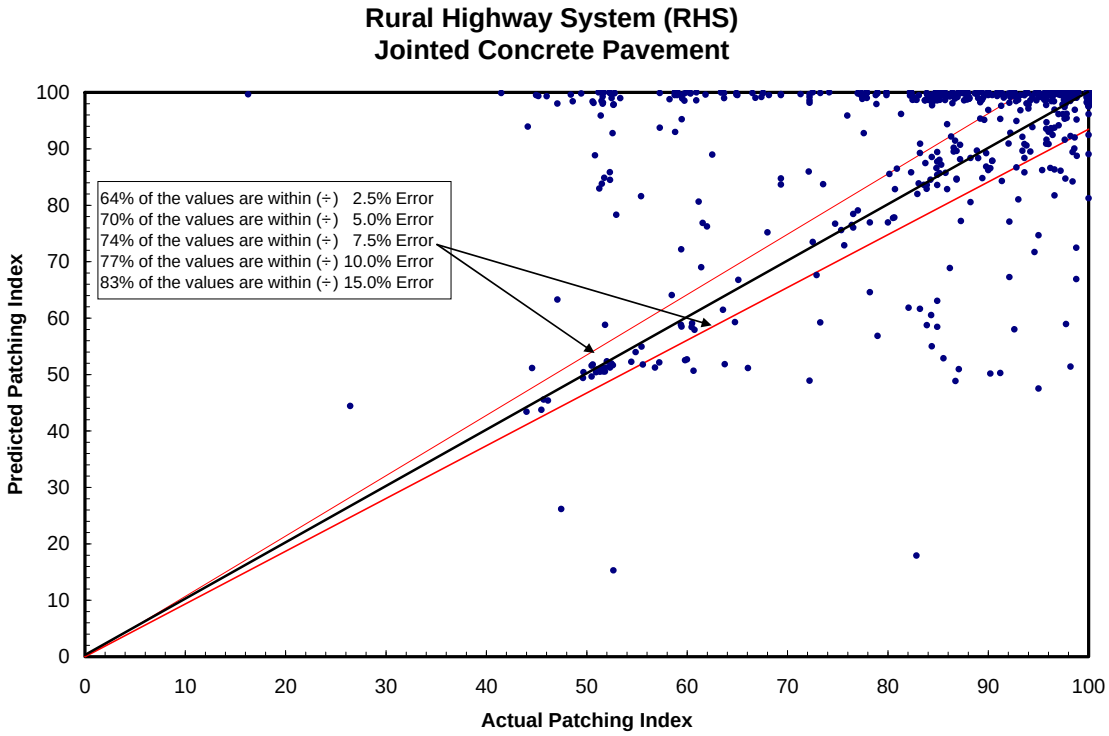


## RHS –Patching Index_JCP

$$PI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.55, $B_1$=0.0170

| (+ -) %Error | % 0f data (1951) |
|---|---|
| 2.5 | 64 |
| 5.0 | 70 |
| 7.5 | 74 |
| 10.0 | 77 |
| 15.0 | 83 |

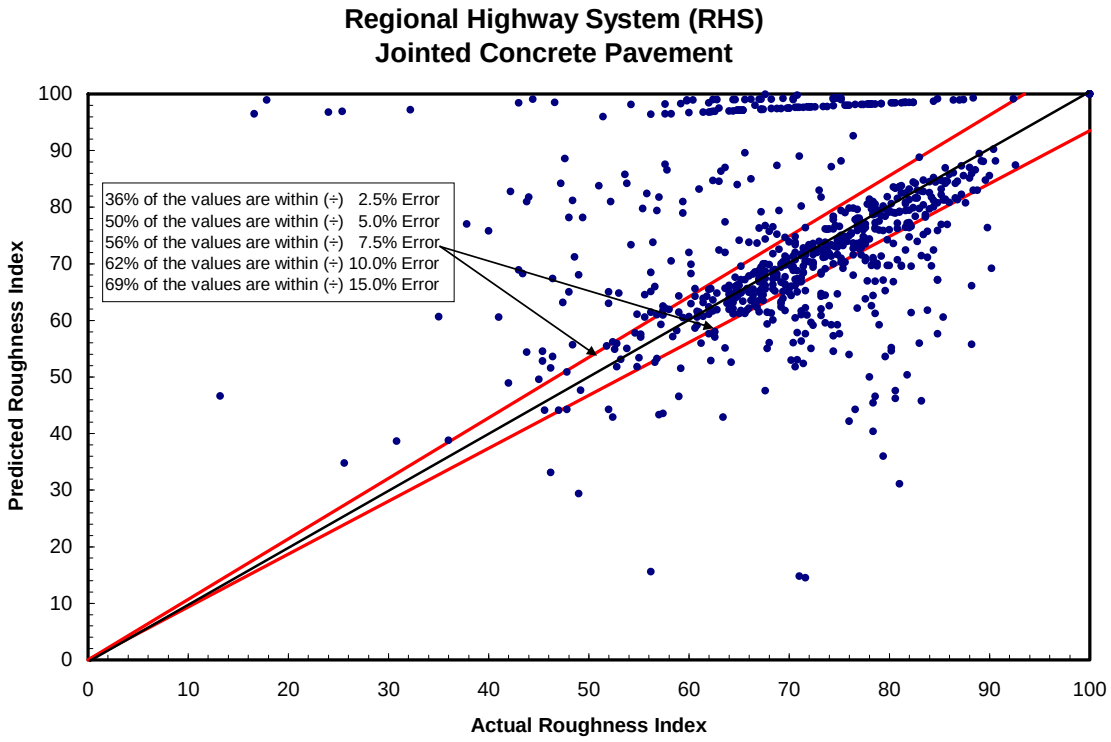


## RHS –Roughness Index_JCP

$$RI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.20, $B_1$=0.178

| (+ -) Error | % 0f data (1884) |
|---|---|
| 2.5 | 36 |
| 5.0 | 50 |
| 7.5 | 56 |
| 10.0 | 62 |
| 15.0 | 69 |

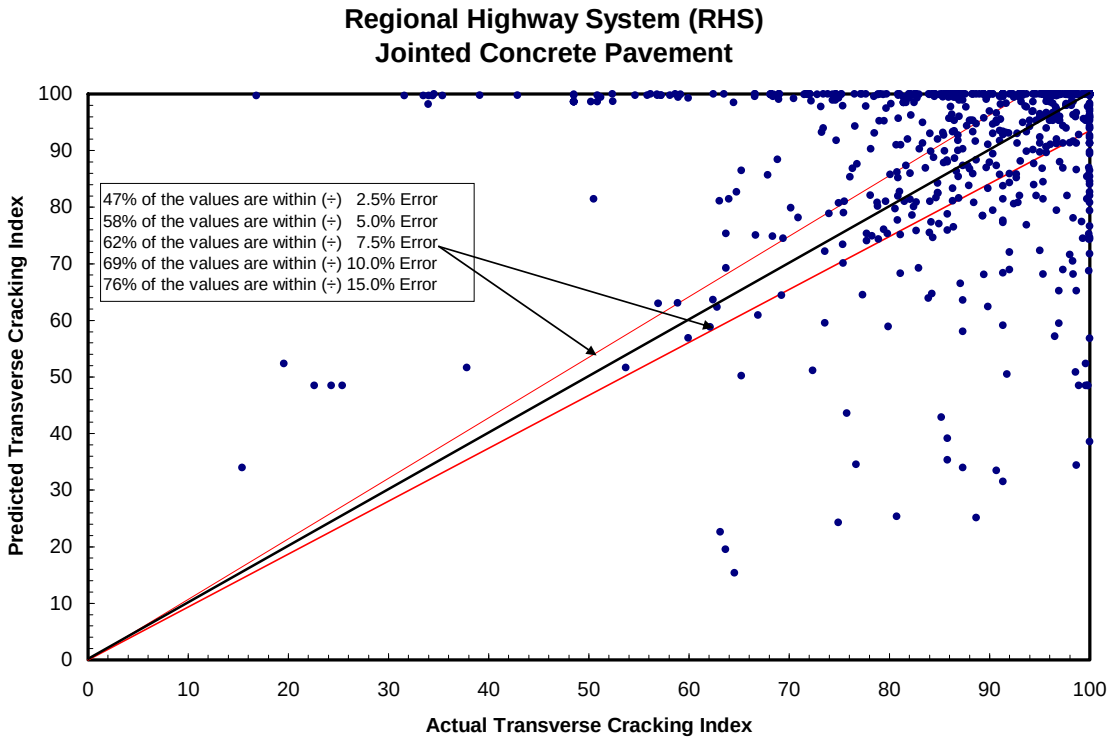


## RHS –Transverse Cracking Index_JCP

$$TCI = 100 - B_1\left(t_A\right)^{a_{avg}}$$

$a_{avg}$=1.42, $B_1$=0.239

| (+ -) Error | % 0f data (1671) |
|---|---|
| 2.5 | 47 |
| 5.0 | 58 |
| 7.5 | 62 |
| 10.0 | 69 |
| 15.0 | 76 |

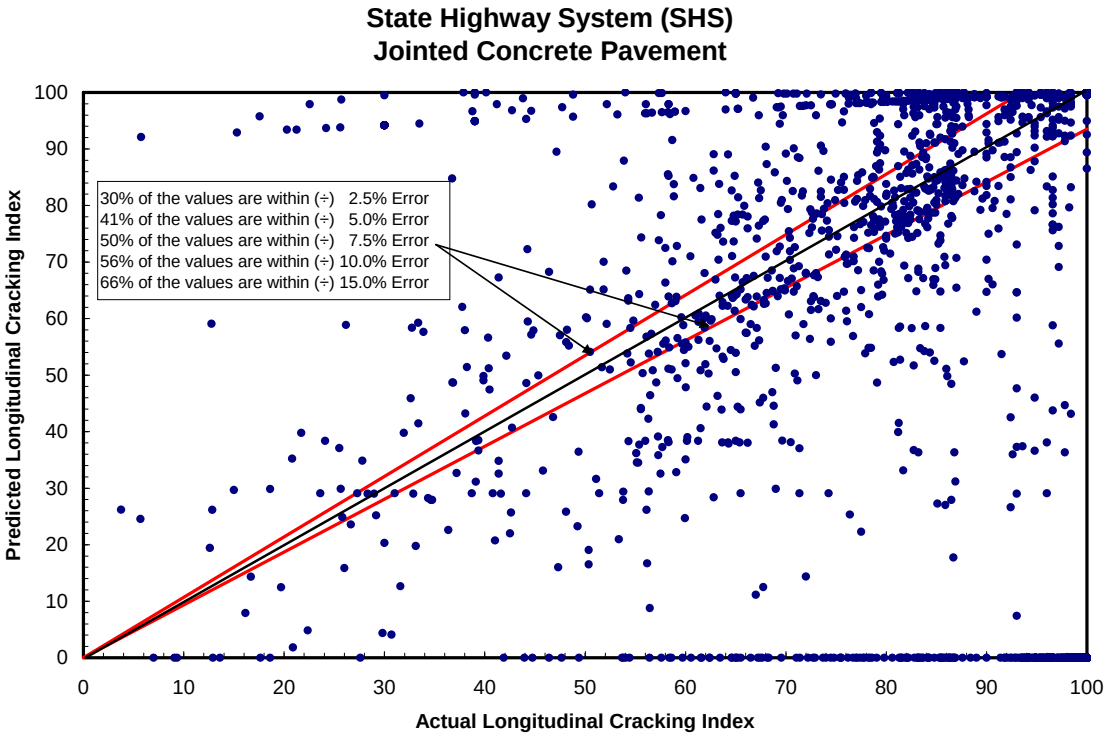


## SHS –Longitudinal Cracking Index_JCP

$$LCI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.19, $b_1$=0.77, and C= -1.31

| (+ -) %Error | % 0f data (2326) |
|---|---|
| 2.5 | 30 |
| 5.0 | 41 |
| 7.5 | 50 |
| 10.0 | 56 |
| 15.0 | 66 |

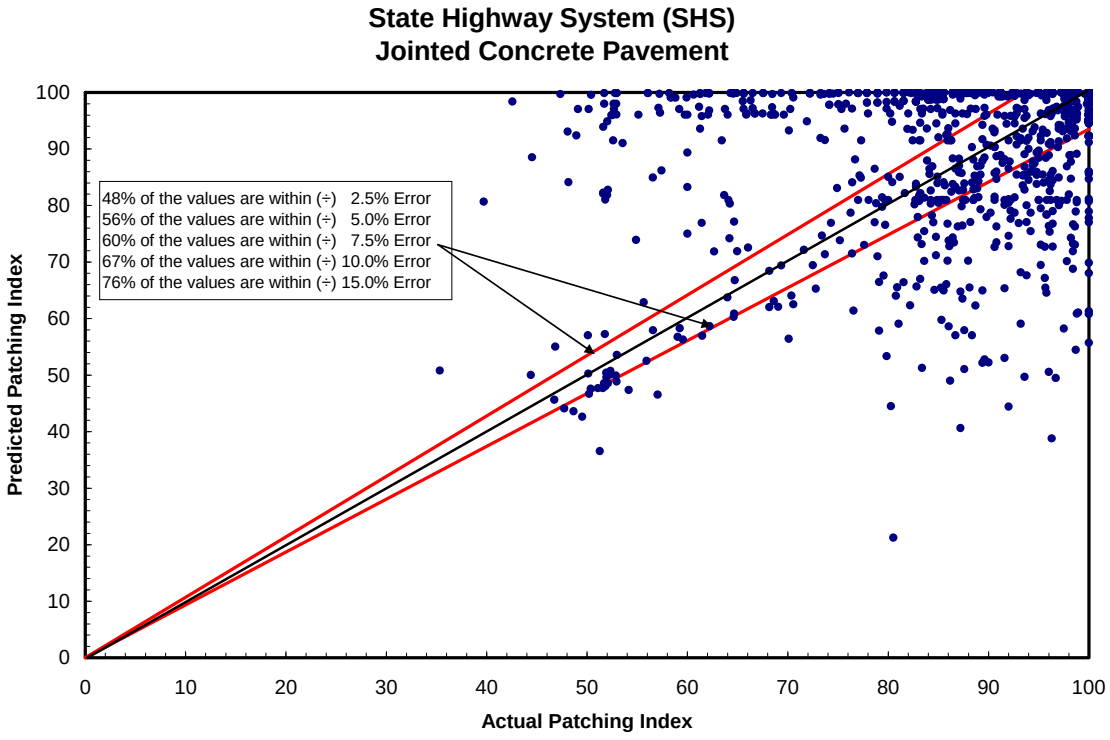


## SHS –Patching Index_JCP

$$PI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.18, $b_1$=0.81, and C= -1.123

| (+ -) %Error | % 0f data (2128) |
|---|---|
| 2.5 | 48 |
| 5.0 | 56 |
| 7.5 | 60 |
| 10.0 | 67 |
| 15.0 | 76 |

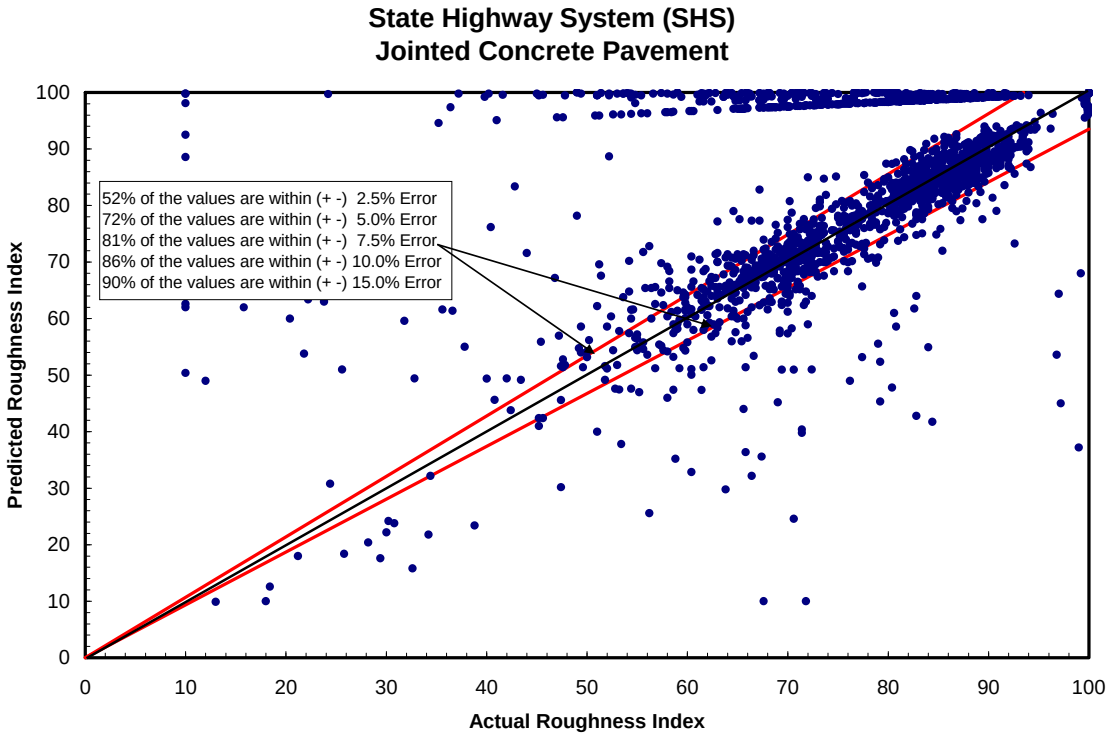


**SHS –Roughness Index_JCP**

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.17, $b_1$=0.52, and C= -0.016

| (+ -) Error | % 0f data (2308) |
|---|---|
| 2.5 | 52 |
| 5.0 | 72 |
| 7.5 | 81 |
| 10.0 | 86 |
| 15.0 | 90 |



## SHS –Transverse Cracking Index_JCP

$$RI = 100 - 10^{\left[b_1 (t_A)^{a_1} \log(t_A) + C\right]}$$

$a_1$=0.17, $b_1$=0.80, and C= -0.855

| (+ -) Error | % 0f data (2002) |
|---|---|
| 2.5 | 49 |
| 5.0 | 60 |
| 7.5 | 65 |
| 10.0 | 73 |
| 15.0 | 81 |