SECTION 104 – CONTROL OF WORK

104.06 CONTRACTOR'S ORGANIZATION.

The following is added after the first paragraph:

All contractor personnel shall wear photo identification at all times on Authority work sites. The photo identification shall have the individual's name, company name and company telephone number.

[Include the following with new bridge construction or deck reconstruction contracts

The following is added after the fourth paragraph::

Ensure the Contractor's Designee for Deck Rideability QC has a minimum of five years highway and/or bridge construction experience with a minimum of three years of relevant experience performing Ride Quality Tests using the equipment specified herein, or approved equal. Do not begin deck or approach slab Ride Quality Tests as defined in Subsection 401.12 (F) (1) until the qualifications of the Contractor's Designee have been approved by the Engineer. The Ride Quality Tests shall be performed under the on-site supervision of the Contractor's Designee, or an individual that meets the experience qualifications stated herein. If an individual other than the Contractor's Designee will supervise the Ride Quality Tests, the qualifications of that person shall be submitted to the Engineer for approval.

DIVISION 400 - STRUCTURES

[Include the following with new bridge construction or deck construction contracts]

401.12 MACHINE FINISHING OF BRIDGE DECK

(A) Machine Finishing of Structural Slab

Delete paragraphs twelve through fifteen.

(F) Deck Surface Requirements.

Delete this subsection in its entirety and replace with the following:

Bridge deck slabs and approach slabs must meet a 1/8 inch in 10 feet straightedge check made longitudinally and transversely. After the final strike-off of the concrete and as close behind the final strike-off as possible, the Engineer will check the surface with a 10 feet straightedge. The surface of concrete bridge deck slabs and approach slabs will be tested with a rolling straightedge that automatically marks the deck surface, in colored dye, the length of deck surface variations which exceed a tolerance of 1/8 inch in 10 feet.

The deck slab shall be struck and finished with a self-propelled finishing machine, as specified in Subsection 401.12 (A), and shall be so constructed that, when tested as specified herein, the tolerances specified herein are not exceeded.

Regardless of the overall surface conformity of the bridge deck and approach slab concrete, if surface deviations have a detrimental effect on deck drainage or reinforcement steel cover, appropriate remedial measures to restore any or all of the deck slab surface to the required grades and surface tolerance will be ordered. When such remedial procedures are ordered, a plan shall be submitted, setting forth the intended limits of the surface restoration and a complete description of the methods, equipment and materials proposed for use.

Following satisfactory completion of the surface restoration measures to the bridge deck slab and/or the approach slab, the affected area shall be retested.

Additional compensation, Extension of Contract Time or other concessions will not be granted for any surface restorations ordered by the Engineer for compliance with the specification.

(1) Ride Quality Test.

After the bridge decks and approach slabs are completed, a qualified Deck Rideability QC Contractor shall perform a Ride Quality Test using the Rainhart Profilograph and a profile index value determined according to GDT 78 which is provided in this specification.

The QC Contractor will conduct the test as follows:

a) Obtain Profile Index Values for bridge deck slabs and approach slabs.

b) Obtain profiles in each wheel path (2 feet off lane line) of each lane and in shoulder areas to within 12 inches of the barrier parapet.

c) *Average the profile index values for the bridge deck slab including the approach slabs for each of the left and right wheel path for each lane. The average value must not exceed* ***15 inch/mile*** *(as computed by the test equipment) for each lane.*

d) ***Localized Slab Requirements*** *- After the test is complete, correct individual bumps or depressions that exceed 2/10 inch from the blanking band on the profilograph trace. (These are localized areas that the trace has defined during the full length test on the deck and approach slab.)*

The deck surface must then meet a 1/8 inch in 10 feet straightedge check made longitudinally and transversely.

The Engineer shall witness all profilogram measurements and review/approve all index calculations.

Correct the major and localized areas of the bridge deck and approach slabs identified above that do not pass the Ride Quality Test, as described in Subsection 401.12 (F) (2) "Corrective Work", presented below.

(2) Corrective Work.

After the test described in Subsection 401.12 (F) (1) "Ride Quality Test" has been performed, complete the corrective work, if required, at no cost to the Authority and before doing the final saw cut grooving.

Complete corrective work as follows:

Plane the deck according to Subsection 401.12 (F) (3) "Grind Bridge Deck."

a) *Limit concrete removal by planning so that the final bar cover is not less than the Plan cover minus 1/2 inch (13 mm).*
b) *If the final bar cover limits cannot be met, perform the corrective work as directed by the Engineer.*
c) *Ensure that the final riding surface complies with this Specification and the requirements for a saw cut grooving finish per Subsection 401.17(F) (3).*
d) *If necessary, use a hand grinder to correct bumps with a profile base line of 5 feet (1.5 m) or less.*
e) *Have planed decks retested as described in Subsection 401.12 (F) (1) "Ride Quality Test," to ensure that the ride quality meets the requirements of this Specification.*

(3) Grind Bridge Deck.

This work includes grinding concrete bridge decks and approach slabs to provide proper drainage and riding characteristics to the pavement surface. Perform the work according to these Specifications and the Plans. Sawcut grooved finish shall be performed after all of the bridge deck slab has been checked for conformance to the specification, and all corrective work has been completed.

(a) Referenced Documents
Georgia Department of Transportation Test No. 78 (See Appendix H).

(b) Personnel
Deck Rideability QC Contractor's personnel shall meet the requirements set forth under Subsection 104.06 (C).

(c) Equipment

(1) *Grinding Equipment*

Use power driven, self-propelled grinding equipment with these characteristics:

- *Diamond blades designed to smooth and texture Portland Cement concrete pavement*
- *Effective wheel base of at least 12 feet*
- *Pivoting tandem bogey wheels at the front of the machine*
- *Rear wheels arranged to travel in the track of the freshly cut pavement*
- *Grinding head with the center no further than 3 feet forward from the center of the back wheels*

Ensure that the equipment:

- *Cuts or planes at least 3 feet wide*
- *Operates without encroaching on traffic movement outside the work area*
- *Grinds the surface without causing spalls at cracks, joints, or other locations*

Periodically check the equipment to ensure that it is in proper working order, especially the wheel "roundness" on the grinding equipment. Immediately correct "out-of-round" wheels.

(2) *Rainhart Profilograph*

Use the Rainhart Profilograph to test the ride quality of the surface of concrete bridge decks and approach slabs.

Rainhart Co.
P.O. Box 4533
Austin, TX 78765-4533
Fax: (512)452-9883
Telephone: (800)628-0021
Local Phone: (512)452-8848
Email: sales@rainhart.com
Website: http://www.rainhart.com/index.html

(d) *Construction*

Grind the deck slab and approach slab surface areas that do not conform to smoothness requirements defined under Subsection 401.12 (F)(1) "Ride Quality Test", or as required to promote drainage.

Grind the surface areas as follows:

(1) *Maintain a constant cross slope between grinding extremities in each lane to ensure that grinding provides positive lateral drainage.*

(2) *Grind the entire area designated by the Engineer until the deck slab surfaces of the adjacent sides of transverse joints are in the same plane.*

(3) *Texture the deck surface, but do not grind extra depth to eliminate minor depressions.*

(4) *Remove grinding residue before it is blown by traffic action or wind. Do not allow residue to flow into gutters, drainage facilities, or across lanes used by public traffic.*

(5) *Regrinding*

To regrind areas to meet the smoothness or final surface finish:

- *Regrind the entire lane width in the area to be corrected. Regrinding of just a portion of the lane width, such as the wheel paths only, will not be permitted.*

H) Acceptance Testing.

Delete this subsection in its entirety and replace with the following:

Acceptance Testing is covered under Subsection 401.12 (F) (1) Ride Quality Test.

APPENDIX H – GEORGIA DEPARTMENT OF TRANSPORTATION TEST NO. 78

A. Scope

Use this test method to determine the Profile Index from profilograms of deck slabs and approach slabs, made with the Rainhart-type profilograph.

Determining the Profile Index involves measuring "scallops" that appear outside a blanking band.

B. Apparatus

The apparatus consists of only the following:

Scale: Use a clear plastic scale, 1.50 inch wide and 11.0 inch long. Near the center of the scale is an opaque band, 0.1 inch wide, extending the entire length of 11.0 inches. On either side of this band are lines scribed 0.1 inch apart, parallel to the opaque band. These lines serve as a convenient scale to measure deviations, or scallops of the graph above or below the blanking band.

C. Sample Size and Preparation

No special sample preparation is needed.

D. Procedures

Place the plastic scale over the profile so it blanks out as much of the profile as possible. The scallops above and below the blanking band will be approximately balanced (See Figure -1).

1. The profile trace will move from a generally horizontal position when going around super-elevated curves, making it impossible to blank out the central portion of the trace without shifting the scale.

2. In this case, break the profile into short sections and reposition the blanking band on each section (see Figure -2.).

Beginning at the right end of the scale, measure and total the height of all the scallops appearing both above and below the blanking band.

Measure each scallop to the nearest 0.05 inch.

Short portions of the profile line may be visible outside the blanking band, but unless they project 0.03 inch or more and extend longitudinally for 2 feet or more, do not include them in the count. (See Figure -1 for special conditions.)

After totaling the scallops in the first scale length, slide the scale to the left. Align the right end of the scale with a small mark made at the end of the first scale length.

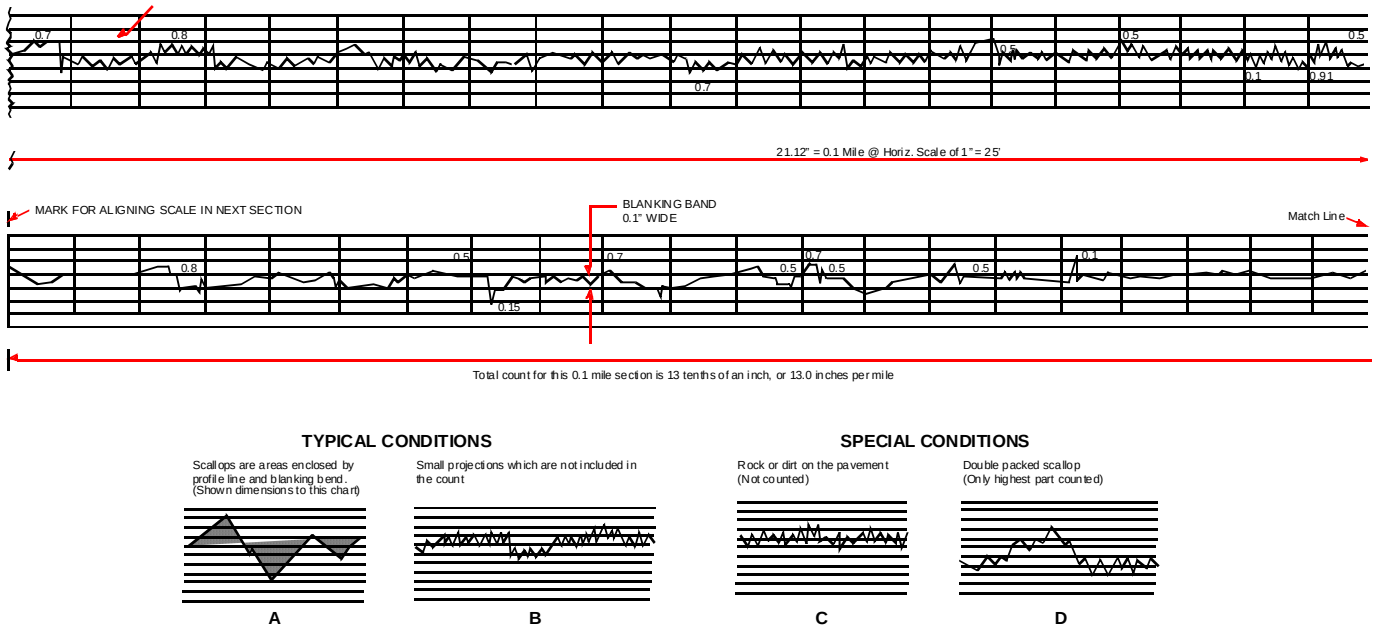
E. Calculations

The Profile Index is determined as "inches per mile in excess of the 0.1 inch blanking band." The formula for calculating Profile Index is:

$$\text{PROFILE INDEX} = \frac{\text{1 MILE}}{\text{LENGTH OF SECTION IN MILES}} \times \text{TOTAL COUNT IN INCHES}$$

F. Report

Report the profile index in "inches per mile in excess of the 0.1 inch blanking band" on the Profilograph Report Form.



EXAMPLE SHOWING METHOD OF DERIVING PROFILE INDEX FROM PROFILOGRAMS

Figure -1

METHOD OF COUNTING WHEN POSITION OF PROFILE SHIFTS AS IT MAY WHEN ROUNDING SHORT RADIUS CURVES WITH SUPERELEVATION

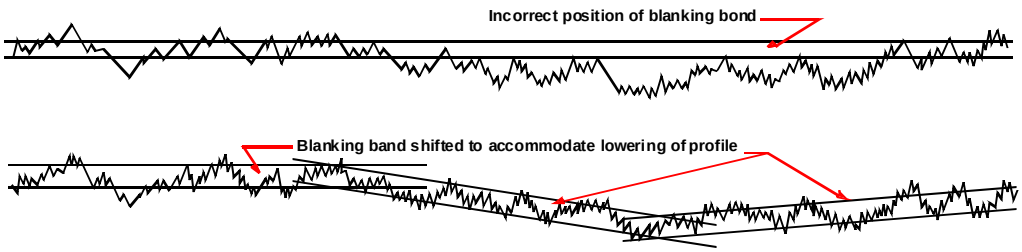


Figure -2

GDT 78 Form 1

Profilograph Report Form

Project No.: Date:

Contractor:

Operator: Profilograph No.:

Segment No.	Location From - To	Direction	Lane No.	Profile Index	Corrections Required
	-				
	-				
	-				
	-				
	-				
	-				
	-				
	-				
	-				
	-				
	-				
	-				

Required Individual Bump Corrections

Segment No.	Station No.

Profilograph Form