

RUTTING - DIPSTICK

General Description

The dipstick was used to measure transverse profile of each lane of traffic in one-foot intervals in 1994-1997. It has also been used on concrete projects to study slab curl and warp, as well as on a limited use basis in MRR research projects.

Operation

A Face Construction Technologies Dipstick was used to collect data from two stations per cell over a three-year period. The dipstick provided transverse elevations at one-foot intervals across two lanes of traffic or four wheel paths.

The dipstick must be leveled prior to each data collection session. This process is similar to using precision bubbles to level an instrument. After learning the zeroing process, the user should be able to complete the zeroing process in only a few minutes.

MnROAD has a standard set of stations that were dipstickted twice a year. Additional stations may have been dipstickted based upon special requests and in accordance with other research projects. The standard set of dipstick stations is listed below:

Mainline			Low Volume Road		
Cell	Station 1	Station 2	Cell	Station 1	Station 2
1	1104+00	1105+00	24	159+00	160+00
2	1111+00	1112+00	25	167+00	168+00
3	1115+00	1116+00	26	173+00	174+00
4	1123+00	1124+00	27	178+00	179+00
14	1190+00	1191+00	28	184+00	185+00
15	1197+00	1198+00	29	190+00	191+00
16	1202+00	1203+00	30	195+00	196+00
17	1209+00	1210+00	31	201+00	202+00
18	1213+00	1214+00			
19	1220+00	1221+00			
20	1224+00	1225+00			
21	1231+00	1232+00			
22	1236+00	1237+00			
23	1243+00	1244+00			



ELEVATION PINS

These pins are used to represent the change in the elevation of the roadway at the dipstick stations. The unit of these pin elevations is in feet. Elevation Survey Pins have been placed at the starting point of every dipstick station on the MnROAD project. The pin was placed in the center of the battery (back) end of the dipstick. When setting up the dipstick the start foot was relative to somewhere on the shoulder stripe and the back foot was centered directly over this survey pin. Each time dipsticking was done at MnROAD the elevation pins were also surveyed. The elevation survey pins were used as a third reference point when drawing the line that was dipsticked. The dipstick like was marked with a lumbar crayon (following a stringline) prior to measurement.



Database Tables

The dipstick data is stored under three separate tables. The first two tables shown below store the raw data, when is then processed into rut depths in the DISTRESS_RUTTING_DIPSTICK table.

DATABASE TABLE – DISTRESS_RUTTING_DIPSTICK_RAW

Name	Null?	Type
DAY	NOT NULL	DATE
CELL	NOT NULL	NUMBER (2,0)
SEQ	NOT NULL	NUMBER (3,0)
READING_NUM	NOT NULL	NUMBER (2,0)
VALUE	NOT NULL	NUMBER (6,3)

DATABASE TABLE – DISTRESS_RUTTING_DIPSTICK_PINS

Name	Null?	Type
DAY	NOT NULL	DATE
CELL	NOT NULL	NUMBER (2,0)
SEQ	NOT NULL	NUMBER (3,0)
STATION		NUMBER (8,2)
SURFACE_ELEVATION		NUMBER (7,3)
PIN_ELEVATION		NUMBER (7,3)



DATABASE TABLE – DISTRESS_RUTTING_DIPSTICK

Name	Null?	Type
DAY	NOT NULL	DATE
CELL	NOT NULL	NUMBER(2)
CONSTRUCTION_NUMBER	NOT NULL	NUMBER(2)
STATION	NOT NULL	NUMBER(8,2)
LANE	NOT NULL	VARCHAR2(15)
LEFT_WP_DEPTH		NUMBER(4,3)
RIGHT_WP_DEPTH		NUMBER(4,3)

For more information:

For more information contact:

Tim Clyne
Office of Materials & Road Research
Phone: 651-366-5473
E-mail: Tim.Clyne@dot.state.mn.us

Ben Worel
Office of Materials & Road Research
Phone: 651-366-5522
Email: Ben.Worel@dot.state.mn.us

www.dot.state.mn.us/mnroad

