

PENNDOT e-Notification

Bureau of Design
Engineering Computing Management Division



BRADD

No. 009

October 27, 2005

Problem with Stationing for Edge of Deck Thickness

Problem Statement:

The stations shown in the geometry output file "geometry.o1" generated for a superstructure design for the "RIGHT EDGE OF DECK THICKNESS AND ELEVATION" table are **not** correct. This table is at the end of the geometry output file. An example of this table is shown below:

RIGHT EDGE OF DECK THICKNESS AND ELEVATION		

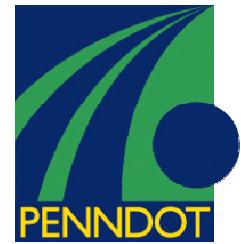
STATION	THICKNESS (in)	TOP OF DECK ELEVATION (ft)
64+11.64	14.6	1178.052
64+22.34	13.9	1177.482
64+33.04	13.2	1176.912
64+43.74	12.7	1176.341
64+54.44	12.3	1175.771
64+65.14	12.2	1175.201
64+75.84	12.3	1174.630
64+86.54	12.7	1174.060
64+97.24	13.2	1173.490
65+07.94	13.9	1172.919
65+18.64	14.6	1172.349

The thickness and top of deck elevation values shown in this table **are** correct. These values are computed at stations corresponding to the c.l. of beam for the right fascia beam for Adjacent Box Beams, I-Beams and Steel Beams, and at the outside corner of the right fascia beam for Spread Box Beams. However, the stations shown in the above table **are not** correct as they do not correspond to the deck thickness and top of deck elevations shown. The stations shown are actually calculated at the outside corner of the left fascia beam for Adjacent

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Box Beams, at the c.l. of the first interior beam for I-Beams and Steel Beams, and at the c.l. of the left fascia beam for Spread Box Beams.

In addition, **for P/S Adjacent Box Beams only**, the stations given in the table "LEFT EDGE OF DECK THICKNESS AND ELEVATION" are also **not** correct. However, the elevations and deck thicknesses given in that table **are** correct for the properly referenced stations, which are computed at the c.l. of beam of the left fascia beam. The stations given in the BRADD output are **incorrectly** calculated at the outside corner of the left fascia beam.

The method of computing the elevations and the correctly referenced locations is documented in Section 3.2.8 of the BRADD Users Manual.

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Problem Workaround:

The correct stations can be obtained from other output contained in the geometry.o1 file. For the above I-Beam example with 4 beams in the cross section, the following is reported in the geometry output file:

* GIRDER 4

LENGTH(ft) :107.000 DELTA S(ft) : 0.000 OFFSETS(ft) : LEFT 20.982
RIGHT 20.982

LEFT BEARING ELEVATION(ft) : 1177.924

POINT	STATION (ft)	OFFSET (ft)	X-COORD (ft)	Y-COORD (ft)	TOP SLAB	
					AT PG. (ft)	TOP SLAB (ft)
L	64+29.92	16.417	-40.433	-16.417	1178.186	1177.924
1	64+40.62	16.417	-29.733	-16.417	1177.615	1177.354
2	64+51.32	16.417	-19.033	-16.417	1177.045	1176.784
3	64+62.02	16.417	-8.333	-16.417	1176.475	1176.213
4	64+72.72	16.417	2.367	-16.417	1175.904	1175.643
5	64+83.42	16.417	13.067	-16.417	1175.334	1175.073
6	64+94.12	16.417	23.767	-16.417	1174.764	1174.502
7	65+04.82	16.417	34.467	-16.417	1174.193	1173.932
8	65+15.52	16.417	45.167	-16.417	1173.623	1173.362
9	65+26.22	16.417	55.867	-16.417	1173.053	1172.792
R	65+36.92	16.417	66.567	-16.417	1172.482	1172.221

RIGHT BEARING ELEVATION(ft) : 1172.221

The stations given above are the stations that should be reported in the RIGHT EDGE OF DECK THICKNESS AND ELEVATION table. The corrected table would be as follows:

RIGHT EDGE OF DECK THICKNESS AND ELEVATION

STATION	THICKNESS (in)	TOP OF DECK ELEVATION (ft)
64+29.92	14.6	1178.052
64+40.62	13.9	1177.482
64+51.32	13.2	1176.912
64+62.02	12.7	1176.341
64+72.72	12.3	1175.771
64+83.42	12.2	1175.201
64+94.12	12.3	1174.630
65+04.82	12.7	1174.060
65+15.52	13.2	1173.490
65+26.22	13.9	1172.919
65+36.92	14.6	1172.349

The following table summarizes the current information and how it can be corrected for each beam type. The "Left/Right Edge Correct Reference" columns in the table show the line in the geometry file that precedes the correct stations, where n is the total number of girders in the cross section.

Superstructure Type	Left Edge Correct?	Left Edge Correct Reference	Right Edge Correct?	Right Edge Correct Reference
Adjacent Box Beam	No	SPAN 1 C.L. GIRDER 1	No	SPAN 1 C.L. GIRDER n
Spread Box Beam	Yes		No	SPAN 1 RIGHT EDGE GIRDER n
I-Beams	Yes		No	GIRDER n
Steel Beams	Yes		No	GIRDER n

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NOTE: The information given in the LEFT EDGE OF DECK THICKNESS AND ELEVATION and RIGHT EDGE OF DECK THICKNESS AND ELEVATION tables of the geometry output file *is not* presented on the BRADD generated drawings. Thus the BRADD generated drawings are *not* affected by this problem.

Problem Resolution:

BRADD will be corrected for this problem as a part of the next release of BRADD.

Please direct any questions to:

Jay M. Fitzgerald, P.E.**BRADD Manager***Engineering Computing Management Division**Bureau of Design**Pennsylvania DOT**Harrisburg, PA***Phone: (717)787-7057 | Fax: (717)783-8217****E-mail: jafitzgera@state.pa.us**

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