

**Technical Note
e-Notification**

No. 04
October 29, 2019

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1. Labeling Diagram Guidance

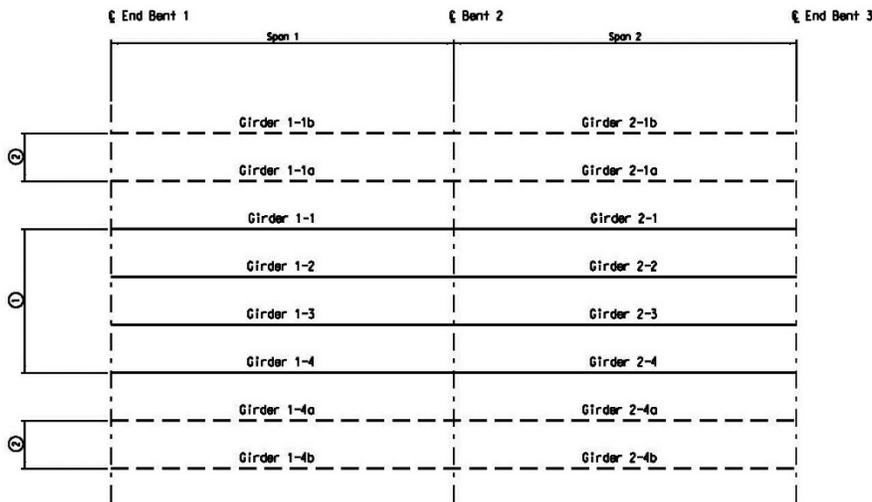
We have received questions regarding clarification of the Labeling Diagram instructions, specifically Appendix A5.3 of the Load Rating Guidance Document (LRGD). The following guidance is intended to clarify or amend the Guidance in Appendix A5.3 of the LRGD. Diagrams completed prior to this guidance shall be updated to conform.

1. Page 5-10, first paragraph, the second sentence is revised to read: *“If existing plans are available for the bridge, the bridge orientation (i.e. the direction of stationing) should match the existing plans.”*
2. Page 5-10, the second paragraph is revised to read: *“Orientation of the bridge (i.e. the direction of stationing and increasing bent numbers) shall be as shown on the existing plans whenever available. If plans are not available or multiple existing plans have conflicting information, the bridge orientation shall be as described in this appendix with bent numbering increasing from South to North and West to East. The numbering of bridge elements shall be as described in this appendix and based upon the bridge orientation. If the orientation of the labeling diagram is set different than existing plans, it shall be noted on the labeling diagram that ‘Labeling diagram differs from plans’.”*
3. Page 5-11, first paragraph, the third sentence is revised to read: *“If new columns or footings are added adjacent to the existing columns and footings, as in the case of a bridge widening, after the original labeling diagram and load rating creation, use an alpha designation for the added columns and footings corresponding to the nearest adjacent column or footing.”*
4. Page 5-11, second paragraph is revised to read: *“Each pile in a substructure shall have a unique number assigned to it. Pile numbers shall be assigned in the direction of the stationing from left to right. For pile bents, the pile designations are composed of two parts: the first label corresponds to the bent number and the second label corresponds to the pile number. For pile footings, the pile designations are composed of three parts: the first label corresponds to the bent number, the second label is the footing number and the third label is the pile number within the substructure component. When piles are added adjacent to the existing piles, as in the case of a bridge widening after the original labeling diagram and load rating creation, label new piles with new numbers, and add an alpha character to the designation of the new pile. Refer to Figures A5.3-4 through A5.3-5 of this document. For piles within a pile bent that are added after the original labeling diagram and load rating creation, refer to Figure A5.3-6.”*
5. Number each superstructure component (e.g. beams) left to right in direction of stationing in each span. When components are added adjacent to existing (e.g. bridge widening) after the original labeling diagram and load rating creation, label new components with number of the nearest adjacent and add alpha characters to the designation. Refer to Figure A5.3-2 of this document. No alpha characters shall be utilized for bridges widened before the generation of the original labeling diagram and load rating.

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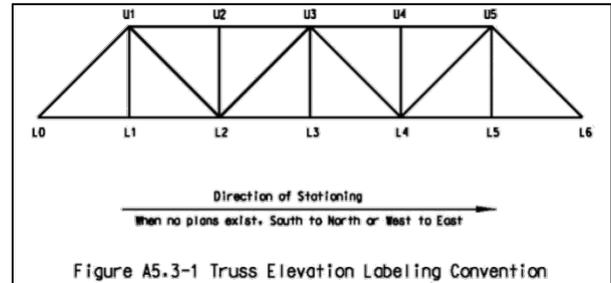
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Direction of Stationing
When no plans exist, South to North or West to East

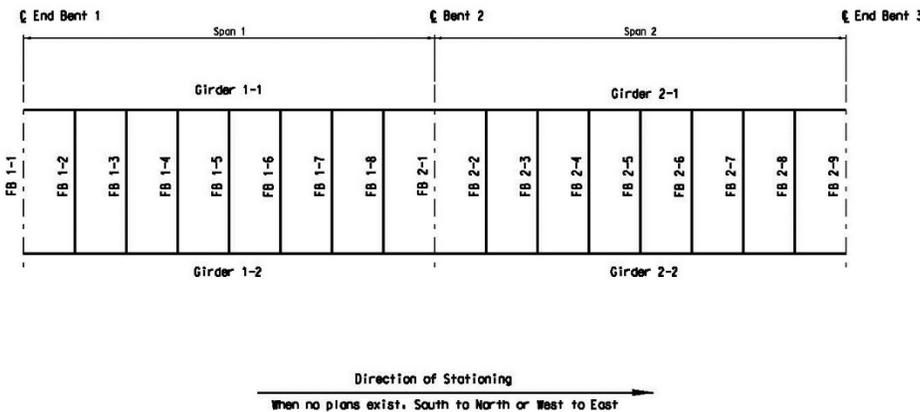
- ① Original Girders from original Labeling Diagram.
- ② Additional Girders from Widened Structure after Labeling Diagram and Load Rating creation.

Figure A5.3-2. Girder Plan View Labeling Convention



Direction of Stationing
When no plans exist, South to North or West to East

Figure A5.3-1 Truss Elevation Labeling Convention



Direction of Stationing
When no plans exist, South to North or West to East

Figure A5.3-3 Girder and Floor Beam Plan View Labeling Convention

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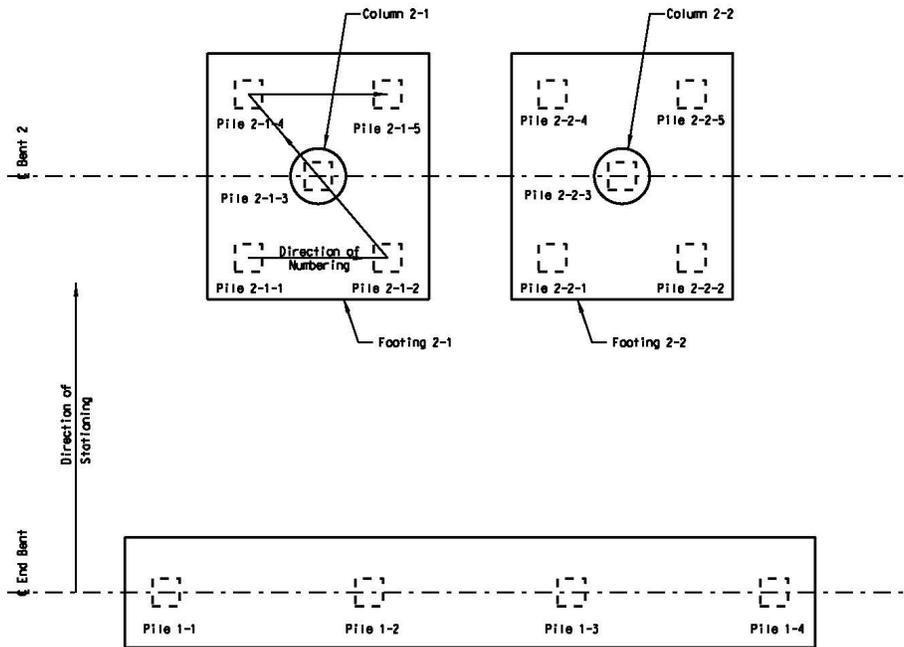


Figure A5.3-4. Standard Pile Labeling Convention

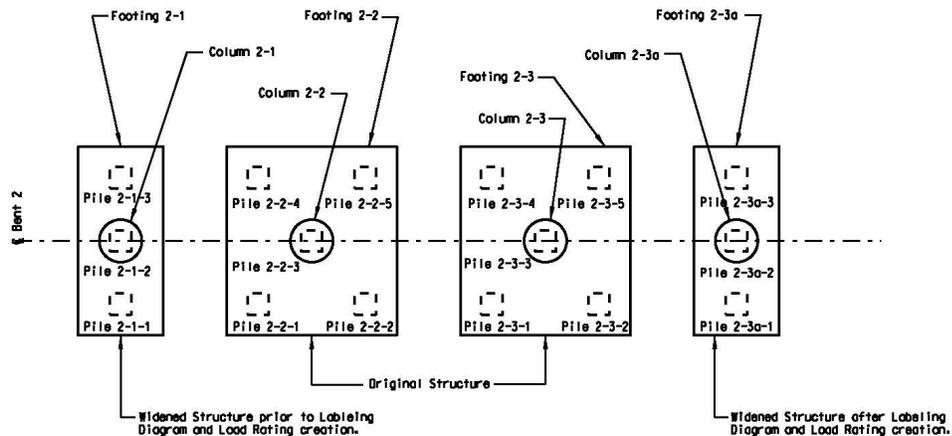
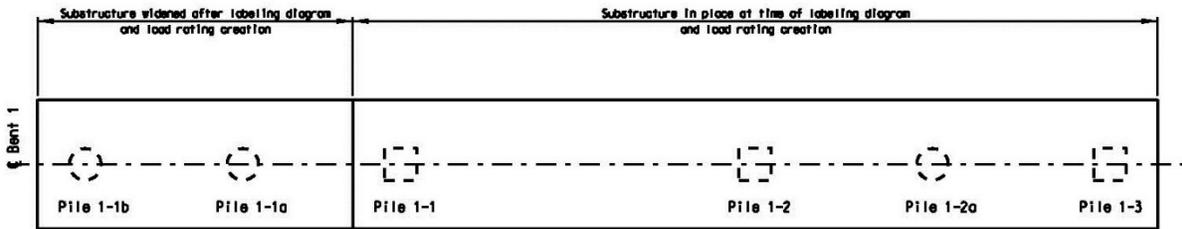


Figure A5.3-5. Labeling Convention for Widened Substructure with Added Piles

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Pile 1-2a added after labeling diagram and load rating creation.

Figure A5.3-6. Standard Pile Labeling Convention

Labeling Diagram, AASHTOWare BrR, and the Load Rating Summary Sheet Correlation for Bridge Widening

Question:

How do the labeling diagram, AASHTOWare BrR, and the Load Rating Summary Sheet correlate to bridge widenings? For example, labeling diagrams have Girders 1A and Girder 1, but I believe AASHTOWare BrR starts with the left most girder as Girder 1 and increases sequentially and this is how it is shown in the Load Rating Summary Form (LRSF).

Answer:

The response included below supersedes the previously posted response to Help Desk e-Notification 017.

Labeling diagrams, as they pertain to bridge widenings, shall be labeled as outlined in the guidelines provided in this Technical Note. As described, added girders to widened structures that are widened after the original labeling diagram and load rating creation will carry an alpha designation.

There is some ambiguity that arises when attempting to strictly follow the girder naming convention as outlined in LRGD Appendix A5.3 for continuous span superstructure definitions and linked superstructure definitions in BrR. Rather than applying the LRGD convention of "Girder [span]-[number]" in BrR, load raters should use the basic naming convention of "G[number]" in BrR, where [number] corresponds to the member number within the cross-section.

The span number(s) are clearly designated within the superstructure definition name in BrR (in accordance with LRGD Section 20.3.2) and therefore the span number does not need to be tied to the girder name. It

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becomes intuitive as to which girder defined in the BrR model corresponds to a girder drawn in the labeling diagram. See *Figures 1 & 2* for further clarification.

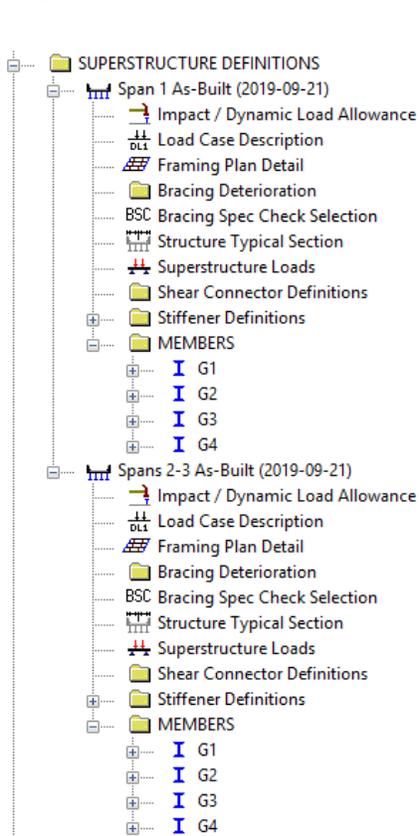


Figure 1 - Labeling defined for current SCDOT load rating contract which includes any widening already constructed

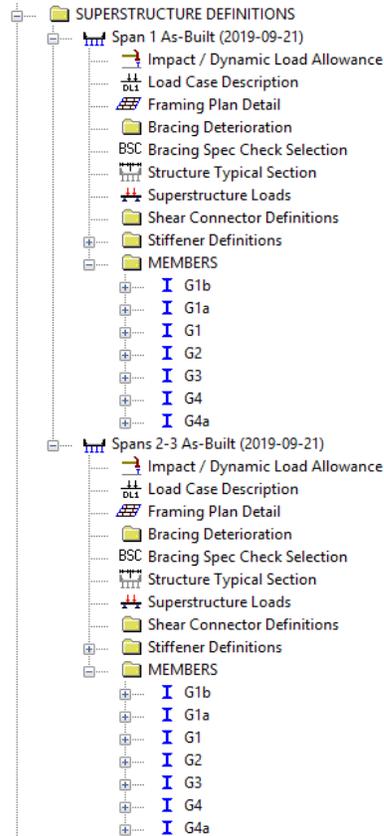


Figure 2 - Labeling defined for future SCDOT contracts which includes future widenings which have not been constructed

The girder labels populated into the Load Rating Summary Form (LRSF) shall match those established in the BrR model. Girders that have been linked in BrR shall all be labeled accordingly in the LRSF and separated by either a comma or dash, when non-consecutive or consecutive, respectively, when populating the LRSF. For example, say fascia girder G6 is linked to member G1 in BrR. The rating results for G1 shall be labeled “G1,G6” in the results worksheet of the LRSF. In this same bridge, say interior girders G3, G4, & G5 are all linked to member G2 in BrR. The rating results for G2 shall be labeled “G2-G5” in the results worksheet.

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As another example, consider an 8-girder bridge modeled in BrR with interior girders G3, G6 & G7 all linked to member G2. The rating results for G2 shall be labeled “G2,G3,G6,G7” or “G2-G3,G6-G7” (as appropriate for larger sets of linked girders) in the results worksheet. See Figures 3 & 4 below.

Spans, however, shall be a single integer which matches the first number in a single or multiple span unit in BrR. This cell is used to determine the controlling location, and thus shall be labeled accordingly. For example, a single span superstructure definition with the name “Span 1 As-Built” shall be labeled as shown in Figure 3, and a multi-span superstructure definition with the name “Spans 2-4 As-Built” shall be labeled as shown in Figure 4.

Span	Girders	Rating Method	Rating Result
1	G1,G6	LRFR	Success
		LRFR	Success

Figure 3 – Fascia girders linked in BrR

Span	Girders	Rating Method	Rating Result
2	G2-G5	LRFR	Success
		LRFR	Success

Span	Girders	Rating Method	Rating Result
2	G2,G3,G6,G7	LRFR	Success
		LRFR	Success

Figure 4 – Interior girders linked in BrR (2 cases)

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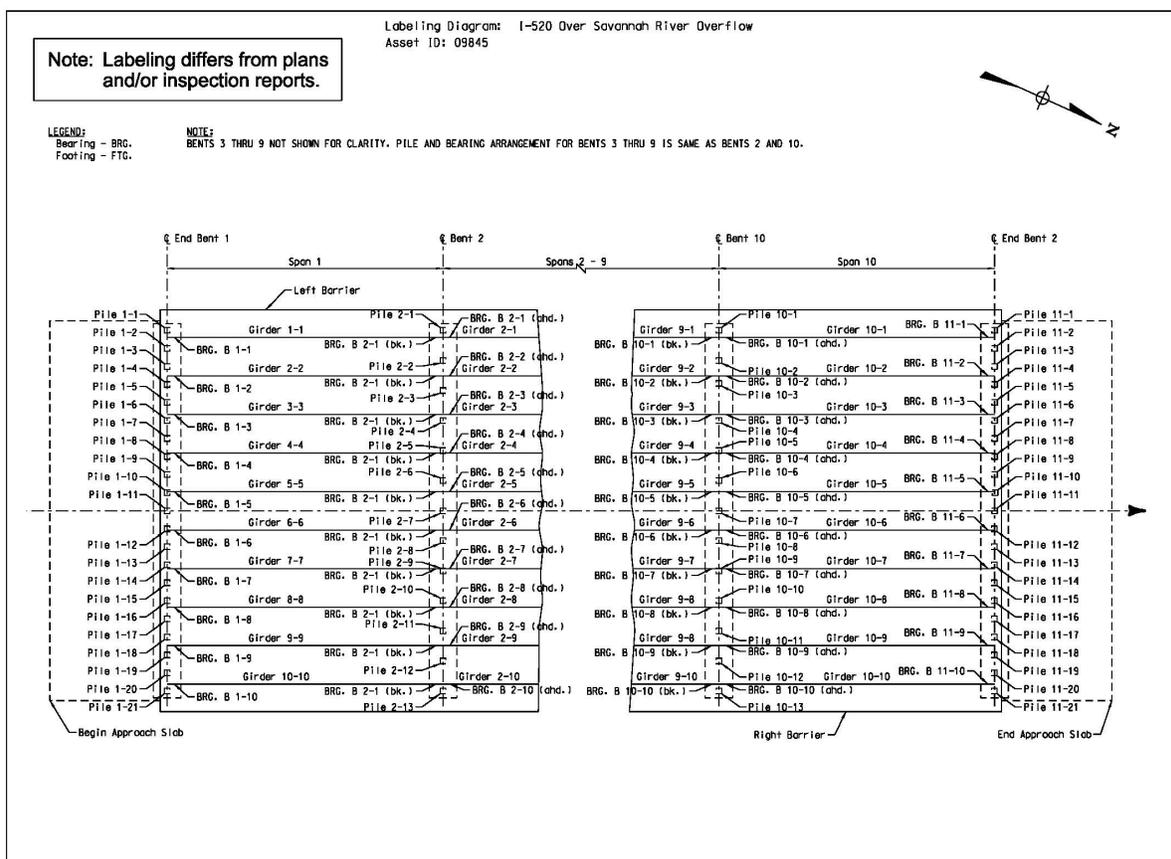
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Multiple Span Labeling Diagram

Question:

Can multiple span bridges be simplified on the labeling diagram as shown?



Answer:

The response included below supersedes the previously posted response to Help Desk e-Notification 018.

No exception is taken to this proposed simplified labeling diagram, except that the numbering and labeling of bridge elements should follow what is documented in Technical Note 04.

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2. Bridge-Like (non-NBI) Structures

There are many structures in the state with openings less than the minimum NBIS length (20 feet) defining a bridge; however, many behave in a similar manner (founded on footings/piles and not considered culverts or pipes). For those greater than 5 feet, a load rating shall be performed when there is an existing posting (load restriction) reported in the most recent NBI data.

3. New Asset IDs and the Asset ID Request Form

New Asset IDs shall be requested for bridges currently under construction or discovered during a site assessment (not included in the NBIS database) using the Asset ID Request Form. The Asset ID Request Form is available from the SCDOT ProjectWise Server. When completing the form, the “Traffic Status:” field selection shall be the status of traffic **currently on the requested structure** at the time the form is prepared. Structures currently in design or constructed but not yet open to traffic shall be coded “G – New structure not yet open to traffic.” It shall then be submitted to SCDOT Road Data Services using the button at the bottom of the form.

4. Measuring Asphalt Overlay

For structures with plans, safely measure the curb reveal at the gutterline and subtract the plan curb height to estimate the asphalt overlay thickness. Safely evaluate the entire deck to ascertain if the overlay may be crowned greater than the underlying concrete deck at any location and account for this additional asphalt. For structures without plans, use engineering judgment to conservatively estimate the thickness. In some cases measurements may be viable at a joint or downspout hole. If necessary to obtain realistic depths, safely drill a small diameter hole in locations as needed (measuring the drill bit penetration to concrete). Plug hole with adequate sealant.

Please direct any questions concerning the above to:

Michael Baker International
e-mail: SCDOT_LR_Help_Desk@listserv.bakerprojects.com