

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

| LEVEL                    | VEHICLE                              | WEIGHT (W)<br>(TONS) | CONTROLLING<br>LOAD RATING<br># | MINIMUM<br>RATING FACTORS<br>(RF) | TONS = W x RF | STRENGTH I LIMIT STATE                  |                              |               |      |                 |   |                              |               |      |                 | SERVICE III LIMIT STATE                   |   |                              |               |      | COMMENT NUMBER |                 |   |  |
|--------------------------|--------------------------------------|----------------------|---------------------------------|-----------------------------------|---------------|---|------------------------------|---------------|------|-----------------|---|------------------------------|---------------|------|-----------------|---|---|------------------------------|---------------|------|----------------|-----------------|---|--|
|                          |                                      |                      |                                 |                                   |               | MOMENT                                  |                              |               |      |                 | SHEAR                                     |                              |               |      |                 | MOMENT                                    |   |                              |               |      |                |                 |   |  |
|                          |                                      |                      |                                 |                                   |               | LIVE-LOAD<br>FACTORS (γ <sub>LL</sub> ) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (FT) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (FT) | LIVE-LOAD<br>FACTORS (γ <sub>LL</sub> ) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN |                | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (FT) |  |
| DESIGN<br>LOAD<br>RATING | HL-93 (INVENTORY)                    | N/A                  | ①                               | 1.05                              | --            | 1.75                                    | 0.833                        | 1.35          | A&B  | I               | 40.1                                      | 1.011                        | 1.08          | A&B  | I               | 23.8                                      | 0.80                                    | 0.833                        | 1.05          | A&B  | I              | 40.1            |   |  |
|                          | HL-93 (OPERATING)                    | N/A                  |                                 | 1.48                              | --            | 1.35                                    | 0.833                        | 1.75          | A&B  | I               | 40.1                                      | 1.011                        | 1.48          | A&B  | I               | 7.5                                       | N/A                                     | --                           | --            | --   | --             | --              |   |  |
|                          | HS-20 (INVENTORY)                    | 36.000               | ②                               | 1.40                              | 50.400        | 1.75                                    | 0.833                        | 1.81          | A&B  | I               | 40.1                                      | 1.011                        | 1.46          | A&B  | I               | 7.5                                       | 0.80                                    | 0.833                        | 1.40          | A&B  | I              | 40.1            |   |  |
|                          | HS-20 (OPERATING)                    | 36.000               |                                 | 1.92                              | 69.120        | 1.35                                    | 0.833                        | 2.34          | A&B  | I               | 40.1                                      | 1.011                        | 1.92          | A&B  | I               | 7.5                                       | N/A                                     | --                           | --            | --   | --             | --              |   |  |
| LEGAL<br>LOAD<br>RATING  | SINGLE VEHICLE<br>(SV)               | SNSH                 | 13.500                          |                                   | 3.25          | 43.875                                  | 1.40                         | 0.833         | 5.22 | A&B             | I   | 40.1                         | 1.011         | 4.58 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 3.25 | A&B            | I               | 40.1                                      |  |
|                          |                                      | SNGARBS2             | 20.000                          |                                   | 2.38          | 47.600                                  | 1.40                         | 0.833         | 3.83 | A&B             | I   | 40.1                         | 1.011         | 3.21 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 2.38 | A&B            | I               | 40.1                                      |  |
|                          |                                      | SNAGRIS2             | 22.000                          |                                   | 2.23          | 49.060                                  | 1.40                         | 0.833         | 3.59 | A&B             | I   | 40.1                         | 1.011         | 2.97 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 2.23 | A&B            | I               | 40.1                                      |  |
|                          |                                      | SNCOTTS3             | 27.250                          |                                   | 1.60          | 43.600                                  | 1.40                         | 0.833         | 2.58 | A&B             | I   | 40.1                         | 1.011         | 2.24 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.60 | A&B            | I               | 40.1                                      |  |
|                          |                                      | SNAGGRS4             | 34.925                          |                                   | 1.33          | 46.450                                  | 1.40                         | 0.833         | 2.14 | A&B             | I   | 40.1                         | 1.011         | 1.83 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.33 | A&B            | I               | 40.1                                      |  |
|                          |                                      | SNS5A                | 35.550                          |                                   | 1.30          | 46.215                                  | 1.40                         | 0.833         | 2.09 | A&B             | I   | 40.1                         | 1.011         | 1.85 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.30 | A&B            | I               | 40.1                                      |  |
|                          |                                      | SNS6A                | 39.950                          |                                   | 1.19          | 47.541                                  | 1.40                         | 0.833         | 1.91 | A&B             | I   | 40.1                         | 1.011         | 1.68 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.19 | A&B            | I               | 40.1                                      |  |
|                          |                                      | SNS7B                | 42.000                          |                                   | 1.13          | 47.460                                  | 1.40                         | 0.833         | 1.82 | A&B             | I   | 40.1                         | 1.011         | 1.64 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.13 | A&B            | I               | 40.1                                      |  |
|                          | TRUCK TRACTOR SEMI-TRAILER<br>(TTST) | TNAGRIT3             | 33.000                          |                                   | 1.45          | 47.850                                  | 1.40                         | 0.833         | 2.34 | A&B             | I   | 40.1                         | 1.011         | 2.01 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.45 | A&B            | I               | 40.1                                      |  |
|                          |                                      | TNT4A                | 33.075                          |                                   | 1.46          | 48.290                                  | 1.40                         | 0.833         | 2.34 | A&B             | I   | 40.1                         | 1.011         | 1.97 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.46 | A&B            | I               | 40.1                                      |  |
|                          |                                      | TNT6A                | 41.600                          |                                   | 1.18          | 49.088                                  | 1.40                         | 0.833         | 1.90 | A&B             | I   | 40.1                         | 1.011         | 1.74 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.18 | A&B            | I               | 40.1                                      |  |
|                          |                                      | TNT7A                | 42.000                          |                                   | 1.19          | 49.980                                  | 1.40                         | 0.833         | 1.91 | A&B             | I   | 40.1                         | 1.011         | 1.70 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.19 | A&B            | I               | 40.1                                      |  |
|                          |                                      | TNT7B                | 42.000                          |                                   | 1.22          | 51.240                                  | 1.40                         | 0.833         | 1.96 | A&B             | I   | 40.1                         | 1.011         | 1.60 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.22 | A&B            | I               | 40.1                                      |  |
|                          |                                      | TNAGRIT4             | 43.000                          |                                   | 1.17          | 50.310                                  | 1.40                         | 0.833         | 1.88 | A&B             | I   | 40.1                         | 1.011         | 1.55 | A&B             | I   | 7.5                                     | 0.80                         | 0.833         | 1.17 | A&B            | I               | 40.1                                      |  |
| TNAGT5A                  | 45.000                               |                      | 1.10                            | 49.500                            | 1.40          | 0.833                                   | 1.77                         | A&B           | I    | 40.1            | 1.011                                     | 1.53                         | A&B           | I    | 7.5             | 0.80                                      | 0.833                                   | 1.10                         | A&B           | I    | 40.1           |                 |   |  |
| TNAGT5B                  | 45.000                               |                      | ③                               | 1.09                              | 49.050        | 1.40                                    | 0.833                        | 1.75          | A&B  | I               | 40.1                                      | 1.011                        | 1.47          | A&B  | I               | 7.5                                       | 0.80                                    | 0.833                        | 1.09          | A&B  | I              | 40.1            |   |  |

LOAD FACTORS:

| DESIGN<br>LOAD<br>RATING<br>FACTORS | LIMIT STATE | γ <sub>DC</sub> | γ <sub>DW</sub> |
|-------------------------------------|-------------|-----------------|-----------------|
|                                     | STRENGTH I  | 1.25            | 1.50            |
|                                     | SERVICE III | 1.00            | 1.00            |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

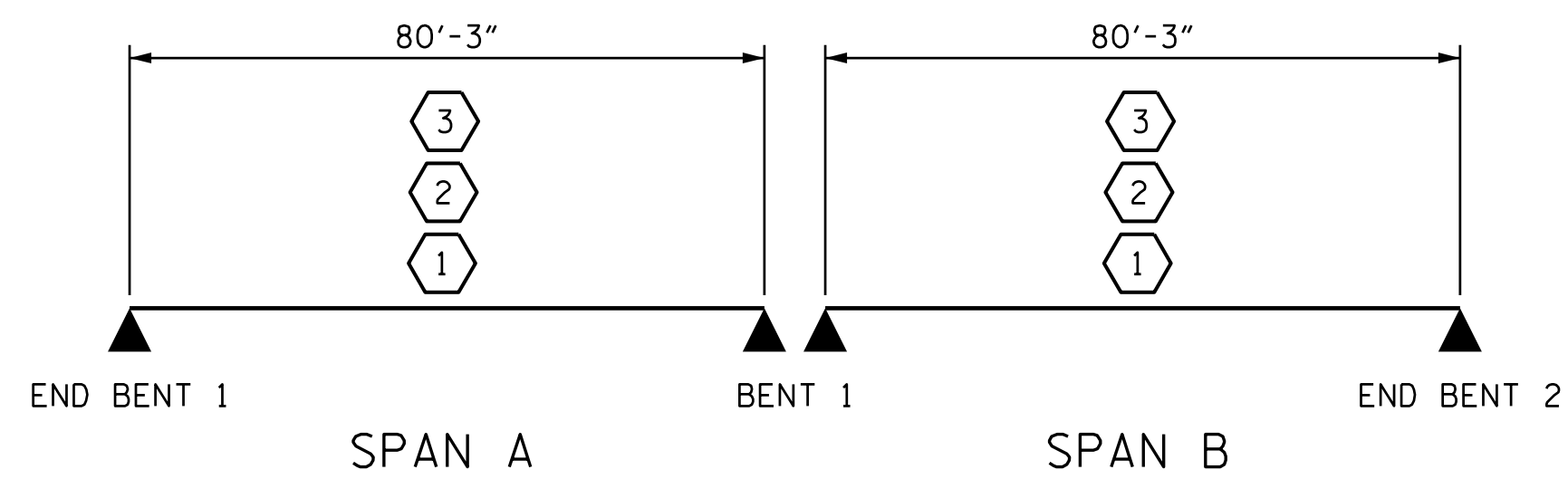
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER  
E - EXTERIOR GIRDER



LRFR SUMMARY

PROJECT NO. I-5987B  
ROBESON COUNTY  
 STATION: 24+76.86 -Y4-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 LRFR SUMMARY FOR  
 PRESTRESSED  
 CONCRETE GIRDERS  
 (NON-INTERSTATE TRAFFIC)

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S4-5         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 29           |

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

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