

LOAD FACTORS:

|                            |             |               |               |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | $\gamma_{DC}$ | $\gamma_{DW}$ |
|                            | STRENGTH I  | 1.25          | 1.50          |
|                            | SERVICE III | 1.00          | 1.00          |

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

| LEVEL              | VEHICLE                           | WEIGHT (W)<br>(TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE |                           |               |      |                 |                                     |                           |               |      |                 | SERVICE III LIMIT STATE             |                        |                           |               |      | COMMENT NUMBER |                 |                                     |  |
|--------------------|-----------------------------------|----------------------|---------------------------|-----------------------------|---------------|------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|------------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|--|
|                    |                                   |                      |                           |                             |               | MOMENT                 |                           |               |      |                 | SHEAR                               |                           |               |      |                 | MOMENT                              |                        |                           |               |      |                |                 |                                     |  |
|                    |                                   |                      |                           |                             |               | LIVE-LOAD FACTORS (CL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FF) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FF) | LIVE-LOAD FACTORS (CL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN |                | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FF) |  |
| DESIGN LOAD RATING | HL-93 (INVENTORY)                 | N/A                  | ①                         | 1.14                        | --            | 1.75                   | 0.854                     | 1.60          | A    | E               | 45.4                                | 1.005                     | 1.20          | A    | I               | 17.7                                | 0.80                   | 0.807                     | 1.14          | A    | I              | 45.4            |                                     |  |
|                    | HL-93 (OPERATING)                 | N/A                  |                           | 1.60                        | --            | 1.35                   | 0.854                     | 2.08          | A    | E               | 45.4                                | 1.005                     | 1.60          | A    | I               | 17.7                                | N/A                    | --                        | --            | --   | --             | --              |                                     |  |
|                    | HS-20 (INVENTORY)                 | 36.000               | ②                         | 1.56                        | 55.80         | 1.75                   | 0.854                     | 2.19          | A    | E               | 45.4                                | 1.005                     | 1.57          | A    | I               | 17.7                                | 0.80                   | 0.807                     | 1.56          | A    | I              | 45.4            |                                     |  |
|                    | HS-20 (OPERATING)                 | 36.000               |                           | 2.08                        | 73.80         | 1.35                   | 0.854                     | 2.84          | A    | E               | 45.4                                | 1.005                     | 2.08          | A    | I               | 17.7                                | N/A                    | --                        | --            | --   | --             | --              |                                     |  |
| LEGAL LOAD RATING  | SINGLE VEHICLE (SV)               | SNSH                 |                           | 3.67                        | 49.14         | 1.40                   | 0.854                     | 6.41          | A    | E               | 45.4                                | 1.005                     | 5.02          | A    | I               | 17.7                                | 0.80                   | 0.807                     | 3.67          | A    | I              | 45.4            |                                     |  |
|                    |                                   | SNGARBS2             | 20.000                    |                             | 2.67          | 53.00                  | 1.40                      | 0.854         | 4.66 | A               | E                                   | 45.4                      | 1.005         | 3.50 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 2.67 | A              | I               | 45.4                                |  |
|                    |                                   | SNAGRIS2             | 22.000                    |                             | 2.51          | 54.78                  | 1.40                      | 0.854         | 4.38 | A               | E                                   | 45.4                      | 1.005         | 3.24 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 2.51 | A              | I               | 45.4                                |  |
|                    |                                   | SNCOTTS3             | 27.250                    |                             | 1.82          | 49.32                  | 1.40                      | 0.854         | 3.19 | A               | E                                   | 45.4                      | 1.005         | 2.43 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.82 | A              | I               | 45.4                                |  |
|                    |                                   | SNAGGRS4             | 34.925                    |                             | 1.50          | 52.03                  | 1.40                      | 0.854         | 2.62 | A               | E                                   | 45.4                      | 1.005         | 1.98 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.50 | A              | I               | 45.4                                |  |
|                    |                                   | SNS5A                | 35.550                    |                             | 1.47          | 51.90                  | 1.40                      | 0.854         | 2.57 | A               | E                                   | 45.4                      | 1.005         | 2.00 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.47 | A              | I               | 45.4                                |  |
|                    |                                   | SNS6A                | 39.950                    |                             | 1.34          | 53.13                  | 1.40                      | 0.854         | 2.34 | A               | E                                   | 45.4                      | 1.005         | 1.81 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.34 | A              | I               | 45.4                                |  |
|                    | TRUCK TRACTOR SEMI-TRAILER (TTST) | SNS7B                | 42.000                    |                             | 1.27          | 53.34                  | 1.40                      | 0.854         | 2.23 | A               | E                                   | 45.4                      | 1.005         | 1.77 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.27 | A              | I               | 45.4                                |  |
|                    |                                   | TNAGRIT3             | 33.000                    |                             | 1.63          | 53.46                  | 1.40                      | 0.854         | 2.85 | A               | E                                   | 45.4                      | 1.005         | 2.18 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.63 | A              | I               | 45.4                                |  |
|                    |                                   | TNT4A                | 33.075                    |                             | 1.63          | 53.58                  | 1.40                      | 0.854         | 2.86 | A               | E                                   | 45.4                      | 1.005         | 2.13 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.63 | A              | I               | 45.4                                |  |
|                    |                                   | TNT6A                | 41.600                    |                             | 1.33          | 54.91                  | 1.40                      | 0.854         | 2.32 | A               | E                                   | 45.4                      | 1.005         | 1.88 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.33 | A              | I               | 45.4                                |  |
|                    |                                   | TNT7A                | 42.000                    |                             | 1.33          | 55.44                  | 1.40                      | 0.854         | 2.32 | A               | E                                   | 45.4                      | 1.005         | 1.84 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.33 | A              | I               | 45.4                                |  |
|                    |                                   | TNT7B                | 42.000                    |                             | 1.36          | 56.70                  | 1.40                      | 0.854         | 2.32 | A               | E                                   | 45.4                      | 1.005         | 1.73 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.36 | A              | I               | 45.4                                |  |
|                    |                                   | TNAGRIT4             | 43.000                    |                             | 1.31          | 55.90                  | 1.40                      | 0.854         | 2.28 | A               | E                                   | 45.4                      | 1.005         | 1.67 | A               | I                                   | 17.7                   | 0.80                      | 0.807         | 1.31 | A              | I               | 45.4                                |  |
| TNAGT5A            | 45.000                            |                      | 1.24                      | 55.35                       | 1.40          | 0.854                  | 2.16                      | A             | E    | 45.4            | 1.005                               | 1.65                      | A             | I    | 17.7            | 0.80                                | 0.807                  | 1.24                      | A             | I    | 45.4           |                 |                                     |  |
| TNAGT5B            | 45.000                            | ③                    | 1.22                      | 54.90                       | 1.40          | 0.854                  | 2.14                      | A             | E    | 45.4            | 1.005                               | 1.58                      | A             | I    | 17.7            | 0.80                                | 0.807                  | 1.22                      | A             | I    | 45.4           |                 |                                     |  |

**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.

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

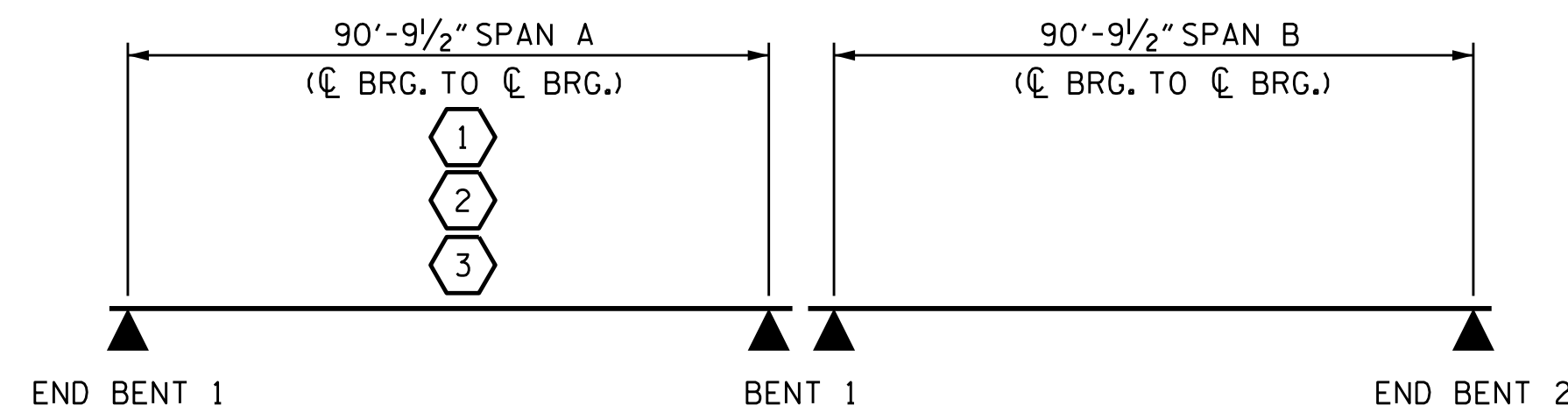
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

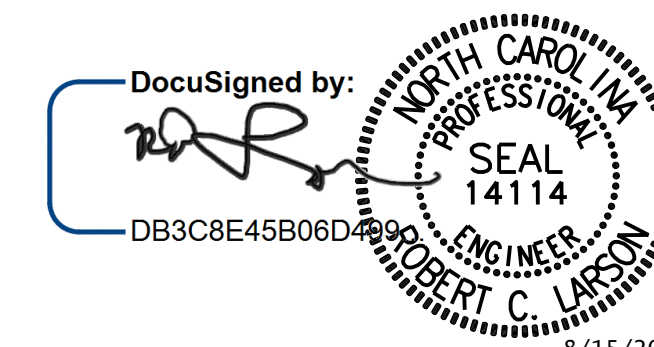
I - INTERIOR GIRDER  
E - EXTERIOR GIRDER



### LRFR SUMMARY

PROJECT NO. R-2561CA  
COLUMBUS COUNTY  
 STATION: 34+01.72 -Y-

|                            |                       |
|----------------------------|-----------------------|
| DESIGN ENGINEER OF RECORD: | DATE: 8/15/2022       |
| ASSEMBLED BY: C. E. LARSON | DATE: 08/01/19        |
| CHECKED BY: R. C. LARSON   | DATE: 08/07/19        |
| DRAWN BY: MAA 1/08         | REV. 11/2/08RR MAA/GM |
| CHECKED BY: GM/DI 2/08     | REV. 10/1/11 MAA/GM   |
|                            | REV. 12/17 MAA/THC    |



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 LRFR SUMMARY FOR  
 PRESTRESSED  
 CONCRETE GIRDERS  
 (NON-INTERSTATE TRAFFIC)

**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

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 of North Carolina, P.A.  
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| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S1-4         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 28           |