

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 ( $\gamma_{LL}$ ) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN                    | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | LIVE-LOAD FACTORS ( $\gamma_{LL}$ ) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION |                | DISTANCE FROM LEFT END OF SPAN (FT) |     |
| DESIGN LOAD RATING | HL-93 (INVENTORY)                 | N/A                  | ①                         | 1.08                        | --            | 1.75                                | 0.899                     | 1.08          | A    | I               | 28.0                                | 1.014                     | 1.37          | A                       | I               | 45.2                                | 0.80                                | 0.775                     | 1.41          | B    | I               | 48.9           | 1;2                                 |     |
|                    | HL-93 (OPERATING)                 | N/A                  | +                         | 1.40                        | --            | 1.35                                | 0.899                     | 1.40          | A    | I               | 28.0                                | 1.022                     | 2.24          | C                       | I               | 78.6                                | N/A                                 | --                        | --            | --   | --              | --             | --                                  | 1;2 |
|                    | HS-20 (INVENTORY)                 | 36.000               | ②                         | 1.37                        | 49:32         | 1.75                                | 0.899                     | 1.37          | A    | I               | 28.0                                | 10:14                     | 2.09          | A                       | I               | 33.8                                | 0.80                                | 0.775                     | 1.56          | B    | I               | 48.9           | 1;2                                 |     |
|                    | HS-20 (OPERATING)                 | 36.000               | +                         | 1.77                        | 63:72         | 1.35                                | 0.899                     | 1.77          | A    | I               | 28.0                                | 1.022                     | 2.99          | C                       | I               | 78.6                                | N/A                                 | --                        | --            | --   | --              | --             | --                                  | 1;2 |
| LEGAL LOAD RATING  | SINGLE VEHICLE (SV)               | SNSH                 | 13.500                    | +                           | 3.67          | 49:55                               | 1.40                      | 0.899         | 3.67 | A               | I                                   | 28.0                      | 1.022         | 7.65                    | C               | I                                   | 78.6                                | 0.80                      | 0.775         | 3.70 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | SNGRBS2              | 20.000                    | +                           | 2.67          | 53:40                               | 1.40                      | 0.899         | 2.81 | A               | I                                   | 28.0                      | 1.022         | 5.35                    | C               | I                                   | 78.6                                | 0.80                      | 0.775         | 2.67 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | SNAGRIS2             | 22.000                    | +                           | 2.50          | 55:00                               | 1.40                      | 0.899         | 2.70 | A               | I                                   | 28.0                      | 1.022         | 4.94                    | B               | I                                   | 78.6                                | 0.80                      | 0.775         | 2.50 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | SNCOTTS3             | 27.250                    | +                           | 1.83          | 49:87                               | 1.40                      | 0.899         | 1.83 | A               | I                                   | 28.0                      | 1.022         | 3.67                    | C               | I                                   | 78.6                                | 0.80                      | 0.775         | 1.84 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | SNAGGRS4             | 34.925                    | +                           | 1.50          | 52:39                               | 1.40                      | 0.899         | 1.56 | A               | I                                   | 28.0                      | 1.014         | 2.75                    | A               | I                                   | 33.8                                | 0.80                      | 0.775         | 1.50 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | SNS5A                | 35.550                    | +                           | 1.47          | 52:26                               | 1.40                      | 0.899         | 1.52 | A               | I                                   | 28.0                      | 1.022         | 2.88                    | B               | I                                   | 19.1                                | 0.80                      | 0.775         | 1.47 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | SNS6A                | 39.950                    | +                           | 1.34          | 53:53                               | 1.40                      | 0.899         | 1.41 | A               | I                                   | 28.0                      | 1.022         | 2.60                    | B               | I                                   | 19.1                                | 0.80                      | 0.775         | 1.34 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | SNS7B                | 42.000                    | +                           | 1.27          | 53:34                               | 1.40                      | 0.899         | 1.34 | A               | I                                   | 28.0                      | 1.022         | 2.49                    | C               | I                                   | 78.6                                | 0.80                      | 0.775         | 1.27 | B               | I              | 48.9                                | 1;2 |
|                    | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3             | 33.000                    | +                           | 1.63          | 53:79                               | 1.40                      | 0.899         | 1.72 | A               | I                                   | 28.0                      | 1.022         | 3.09                    | B               | I                                   | 19.1                                | 0.80                      | 0.775         | 1.63 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | TNT4A                | 33.075                    | +                           | 1.63          | 53:91                               | 1.40                      | 0.899         | 1.73 | A               | I                                   | 28.0                      | 1.022         | 3.26                    | B               | I                                   | 78.6                                | 0.80                      | 0.775         | 1.63 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | TNT6A                | 41.600                    | +                           | 1.32          | 54:91                               | 1.40                      | 0.899         | 1.43 | A               | I                                   | 28.0                      | 1.022         | 2.68                    | B               | I                                   | 19.1                                | 0.80                      | 0.775         | 1.32 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | TNT7A                | 42.000                    | +                           | 1.32          | 55:44                               | 1.40                      | 0.899         | 1.44 | A               | I                                   | 28.0                      | 1.022         | 2.63                    | B               | I                                   | 19.1                                | 0.80                      | 0.775         | 1.32 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | TNT7B                | 42.000                    | +                           | 1.35          | 56:70                               | 1.40                      | 0.899         | 1.51 | A               | I                                   | 28.0                      | 1.022         | 2.48                    | B               | I                                   | 19.1                                | 0.80                      | 0.775         | 1.35 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | TNAGRIT4             | 43.000                    | +                           | 1.30          | 55:90                               | 1.40                      | 0.899         | 1.42 | A               | I                                   | 28.0                      | 1.022         | 2.44                    | B               | I                                   | 19.1                                | 0.80                      | 0.775         | 1.30 | B               | I              | 48.9                                | 1;2 |
|                    |                                   | TNAGT5A              | 45.000                    | +                           | 1.23          | 55:35                               | 1.40                      | 0.899         | 1.34 | A               | I                                   | 28.0                      | 1.022         | 2.33                    | B               | I                                   | 19.1                                | 0.80                      | 0.775         | 1.23 | B               | I              | 48.9                                | 1;2 |
| TNAGT5B            | 45.000                            | ③                    | 1.22                      | 54:90                       | 1.40          | 0.899                               | 1.32                      | A             | I    | 28.0            | 1.014                               | 2.03                      | A             | I                       | 33.8            | 0.80                                | 0.775                               | 1.22                      | B             | I    | 48.9            | 1;2            |                                     |     |

**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. SPANS B AND C LENGTHS AND RATING FACTORS ARE EQUAL.  
 2. THE REDUCTION OF LOAD DISTRIBUTION FACTOR FOR MOMENT IN LONGITUDINAL BEAMS ON SKEWED SUPPORTS (AASHTO TABLE 4.6.2.2.2E-1) WAS NOT APPLIED.

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

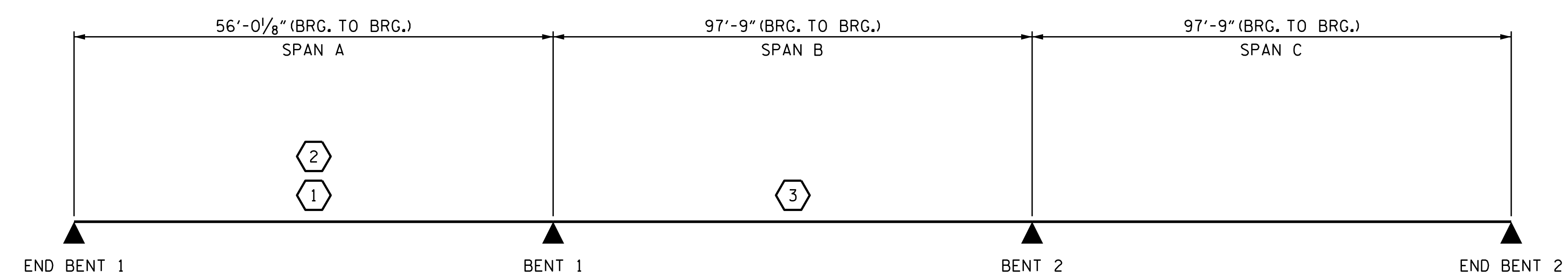
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

I - INTERIOR GIRDER  
 EL - EXTERIOR LEFT GIRDER  
 ER - EXTERIOR RIGHT GIRDER



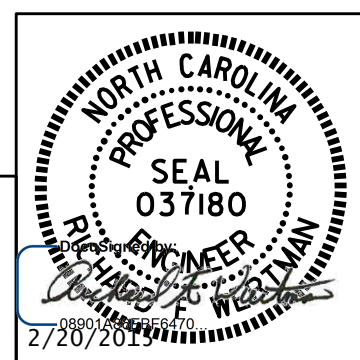
PROJECT NO. R-2915B  
ASHE COUNTY  
 STATION: 242+67.42 -L-

LRFR SUMMARY

ASSEMBLED BY : T.J. KIRSCHBAUM DATE : 5/8/14  
 CHECKED BY : R.F. WERTMAN DATE : 7/31/14  
 DRAWN BY : MAA 1/08 REV. 11/2/08RR MAA/GM  
 CHECKED BY : GM/DI 2/08 REV. 10/1/11 MAA/GM

PLANS PREPARED BY:  
**Gannett Fleming**  
 Excellence Delivered As Promised  
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THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.



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

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S05-4        |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 35           |