

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | SERVICE II LIMIT STATE | | | | | | COMMENT NUMBER | | | | | | |
|--------------------------|--------------------------------------|-----------------------|---------------------------------|-----------------------------------|---------------|---|------------------------------|---------------|-------|-----------------|---|------------------------------|---------------|------|-----------------|---|---|----------------|------------------------------|---------------|------|-----------------|---|--|
| | | | | | | MOMENT | | | SHEAR | | | MOMENT | | | | | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (γ _{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 (γ _{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 | 1.17 | -- | 1.75 | 0.777 | 1.41 | B | I-2 | 60.50 | 1.119 | 1.41 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.17 | B | I-2 | 60.50 | | |
| | HL-93 (OPERATING) | N/A | | 1.53 | -- | 1.35 | 0.777 | 1.83 | B | I-2 | 60.50 | 1.119 | 1.83 | B | I-2 | 0.00 | 1.00 | 0.777 | 1.53 | B | I-2 | 60.50 | | |
| | HS-20 (INVENTORY) | 36.00 | ② | 1.84 | 66.24 | 1.75 | 0.777 | 1.88 | B | I-2 | 60.50 | 1.119 | 1.98 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.84 | B | I-2 | 60.50 | | |
| | HS-20 (OPERATING) | 36.00 | | 2.39 | 86.11 | 1.35 | 0.777 | 2.44 | B | I-2 | 60.50 | 1.119 | 2.57 | B | I-2 | 0.00 | 1.00 | 0.777 | 2.39 | B | I-2 | 60.50 | | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 4.46 | 60.21 | 1.40 | 0.777 | 5.05 | B | I-2 | 60.50 | 1.119 | 5.56 | B | I-2 | 0.00 | 1.30 | 0.777 | 4.46 | B | I-2 | 60.50 | |
| | | SNGARBS2 | 20.000 | | 3.18 | 63.60 | 1.40 | 0.777 | 3.82 | B | I-2 | 60.50 | 1.119 | 4.08 | B | I-2 | 0.00 | 1.30 | 0.777 | 3.18 | B | I-2 | 60.50 | |
| | | SNAGRIS2 | 22.000 | | 2.96 | 65.12 | 1.40 | 0.777 | 3.59 | B | I-2 | 60.50 | 1.119 | 3.79 | B | I-2 | 0.00 | 1.30 | 0.777 | 2.96 | B | I-2 | 60.50 | |
| | | SNCOTTS3 | 27.250 | | 2.21 | 60.22 | 1.40 | 0.777 | 2.78 | B | I-2 | 60.50 | 1.119 | 3.04 | B | I-2 | 121.00 | 1.30 | 0.777 | 2.21 | B | I-2 | 60.50 | |
| | | SNAGGRS4 | 34.925 | | 1.80 | 62.87 | 1.40 | 0.777 | 2.31 | B | I-2 | 60.50 | 1.119 | 2.50 | B | I-2 | 121.00 | 1.30 | 0.777 | 1.80 | B | I-2 | 60.50 | |
| | | SNS5A | 35.550 | | 1.76 | 62.57 | 1.40 | 0.777 | 2.26 | B | I-2 | 60.50 | 1.119 | 2.49 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.76 | B | I-2 | 60.50 | |
| | | SNS6A | 39.950 | | 1.59 | 63.52 | 1.40 | 0.777 | 2.07 | B | I-2 | 60.50 | 1.119 | 2.26 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.59 | B | I-2 | 60.50 | |
| | | SNS7B | 42.000 | | 1.52 | 63.84 | 1.40 | 0.777 | 1.97 | B | I-2 | 60.50 | 1.119 | 2.19 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.52 | B | I-2 | 60.50 | |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.94 | 64.02 | 1.40 | 0.777 | 2.47 | B | I-2 | 60.50 | 1.119 | 2.68 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.94 | B | I-2 | 60.50 | |
| | | TNT4A | 33.075 | | 1.94 | 64.17 | 1.40 | 0.777 | 2.47 | B | I-2 | 60.50 | 1.119 | 2.64 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.94 | B | I-2 | 60.50 | |
| | | TNT6A | 41.600 | | 1.57 | 65.31 | 1.40 | 0.777 | 2.03 | B | I-2 | 60.50 | 1.119 | 2.27 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.57 | B | I-2 | 60.50 | |
| | | TNT7A | 42.000 | | 1.56 | 65.52 | 1.40 | 0.777 | 2.03 | B | I-2 | 60.50 | 1.119 | 2.23 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.56 | B | I-2 | 60.50 | |
| | | TNT7B | 42.000 | | 1.59 | 66.78 | 1.40 | 0.777 | 2.07 | B | I-2 | 60.50 | 1.119 | 2.17 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.59 | B | I-2 | 60.50 | |
| | TNAGRIT4 | 43.000 | | 1.53 | 65.79 | 1.40 | 0.777 | 1.99 | B | I-2 | 60.50 | 1.119 | 2.11 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.53 | B | I-2 | 60.50 | | |
| | TNAGT5A | 45.000 | | 1.46 | 65.70 | 1.40 | 0.777 | 1.90 | B | I-2 | 60.50 | 1.119 | 2.06 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.46 | B | I-2 | 60.50 | | |
| | TNAGT5B | 45.000 | ③ | 1.45 | 65.25 | 1.40 | 0.777 | 1.89 | B | I-2 | 60.50 | 1.119 | 2.02 | B | I-2 | 0.00 | 1.30 | 0.777 | 1.45 | B | I-2 | 60.50 | | |
| FATIGUE | HL-93 (INVENTORY) | γ _{LL} =0.75 | | 2.73 | | | | | | | | | | | | | | | | | | | | |

LOAD FACTORS:

| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ _{DC} | γ _{DW} |
|-------------------------------------|-------------|-----------------|-----------------|
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE II | 1.00 | 1.00 |

NOTES:

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

ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93) **

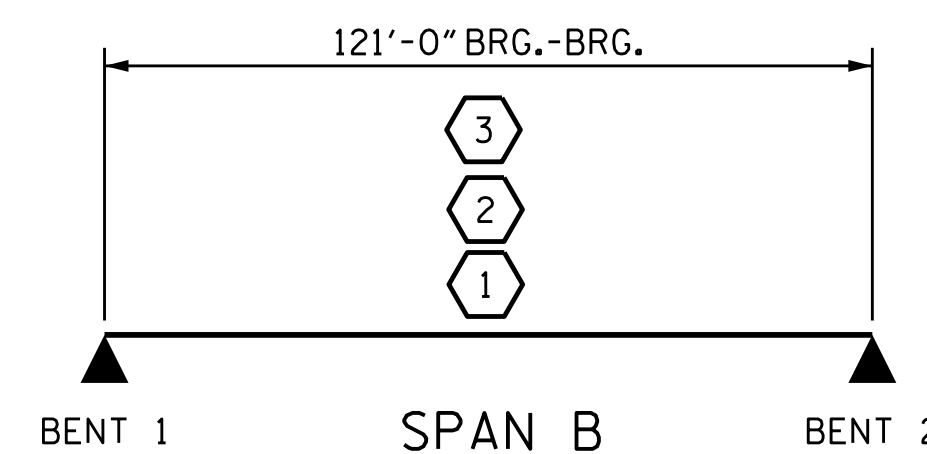
② DESIGN LOAD RATING (HS-20) **

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

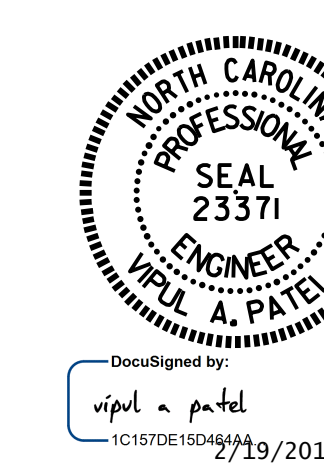
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-5136
CABARRUS COUNTY
 STATION: 21+74.92 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

LRFR SUMMARY FOR
 STEEL GIRDERS
 (NON-INTERSTATE TRAFFIC)

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-7 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 75 |

ASSEMBLED BY : G. W. DICKEY DATE : 5/31/13
 CHECKED BY : R. L. CHESSON DATE : 8/9/13

DRAWN BY : MAA 1/08 REV. 11/2/08RR MAA/GM DESIGN ENGINEER OF RECORD:
 CHECKED BY : GM/DI 2/08 REV. 10/1/11 MAA/GM V. A. PATEL DATE : 1/5/15