

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

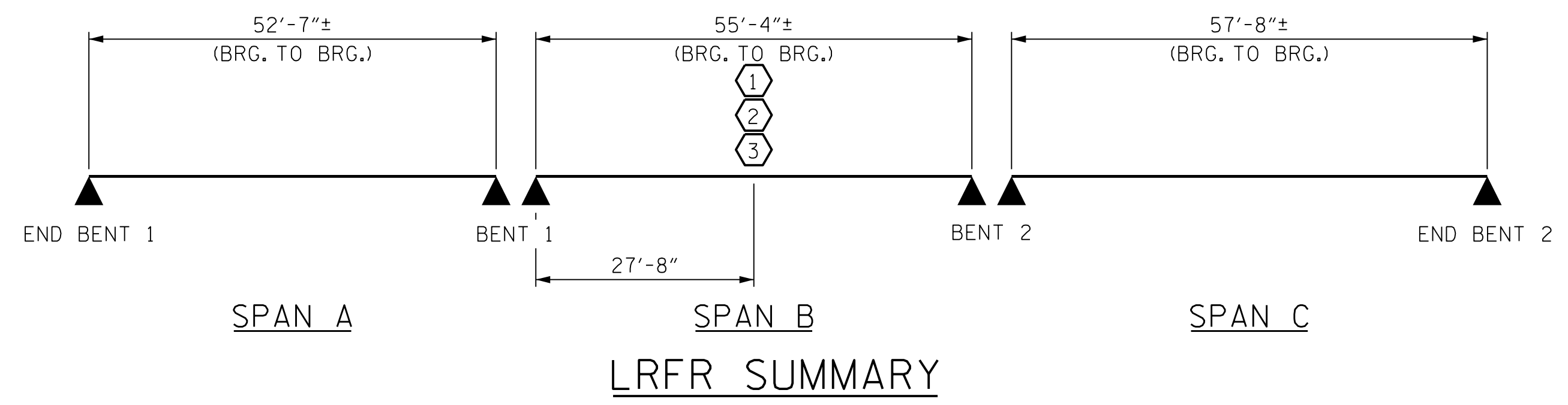
| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE II LIMIT STATE | | | | | COMMENT NUMBER | | | |
|--------------------------|--------------------------------------|-----------------------|---------------------------------|-----------------------------------|---------------|---|------------------------------|---------------|------|-----------------|---|------------------------------|---------------|------|-----------------|---|---|------------------------------|---------------|------|----------------|-----------------|---|--|
| | | | | | | 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 | 1.20 | -- | 1.75 | 0.59 | 1.20 | B | I | 27.67 | 0.95 | 2.44 | B | I | 55.33 | 1.30 | 0.59 | 1.72 | B | I | 27.67 | | |
| | HL-93 (OPERATING) | N/A | | 1.56 | -- | 1.35 | 0.59 | 1.56 | B | I | 27.67 | 0.95 | 3.16 | B | I | 55.33 | 1.00 | 0.59 | 2.24 | B | I | 27.67 | | |
| | HS-20 (INVENTORY) | 36.00 | ② | 1.52 | 54.72 | 1.75 | 0.59 | 1.52 | B | I | 27.67 | 0.95 | 2.98 | B | I | 55.33 | 1.30 | 0.59 | 1.74 | B | I | 27.67 | | |
| | HS-20 (OPERATING) | 36.00 | | 1.97 | 70.93 | 1.35 | 0.59 | 1.97 | B | I | 27.67 | 0.95 | 3.86 | B | I | 55.33 | 1.00 | 0.59 | 2.26 | B | I | 27.67 | | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 4.03 | 54.41 | 1.40 | 0.59 | 4.03 | B | I | 27.67 | 0.95 | 8.74 | B | I | 55.33 | 1.30 | 0.59 | 4.61 | B | I | 27.67 | |
| | | SNGARBS2 | 20.000 | | 3.11 | 62.20 | 1.40 | 0.59 | 3.11 | B | I | 27.67 | 0.95 | 6.25 | B | I | 55.33 | 1.30 | 0.59 | 3.56 | B | I | 27.67 | |
| | | SNAGRIS2 | 22.000 | | 3.00 | 66.00 | 1.40 | 0.59 | 3.00 | B | I | 27.67 | 0.95 | 5.87 | B | I | 55.33 | 1.30 | 0.59 | 3.43 | B | I | 27.67 | |
| | | SNCOTTS3 | 27.250 | | 2.00 | 54.50 | 1.40 | 0.59 | 2.00 | B | I | 27.67 | 0.95 | 4.32 | B | I | 55.33 | 1.30 | 0.59 | 2.29 | B | I | 27.67 | |
| | | SNAGGRS4 | 34.925 | | 1.72 | 60.07 | 1.40 | 0.59 | 1.72 | B | I | 27.67 | 0.95 | 3.64 | B | I | 55.33 | 1.30 | 0.59 | 1.97 | B | I | 27.67 | |
| | | SNS5A | 35.550 | | 1.68 | 59.72 | 1.40 | 0.59 | 1.68 | B | I | 27.67 | 0.95 | 3.71 | B | I | 55.33 | 1.30 | 0.59 | 1.92 | B | I | 27.67 | |
| | | SNS6A | 39.950 | | 1.56 | 62.32 | 1.40 | 0.59 | 1.56 | B | I | 27.67 | 0.95 | 3.39 | B | I | 55.33 | 1.30 | 0.59 | 1.78 | B | I | 27.67 | |
| | | SNS7B | 42.000 | | 1.49 | 62.58 | 1.40 | 0.59 | 1.49 | B | I | 27.67 | 0.95 | 3.33 | B | I | 55.33 | 1.30 | 0.59 | 1.70 | B | I | 27.67 | |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.90 | 62.70 | 1.40 | 0.59 | 1.90 | B | I | 27.67 | 0.95 | 4.02 | B | I | 55.33 | 1.30 | 0.59 | 2.18 | B | I | 27.67 | |
| | | TNT4A | 33.075 | | 1.92 | 63.50 | 1.40 | 0.59 | 1.92 | B | I | 27.67 | 0.95 | 3.90 | B | I | 55.33 | 1.30 | 0.59 | 2.20 | B | I | 27.67 | |
| | | TNT6A | 41.600 | | 1.59 | 66.14 | 1.40 | 0.59 | 1.59 | B | I | 27.67 | 0.95 | 3.64 | B | I | 55.33 | 1.30 | 0.59 | 1.81 | B | I | 27.67 | |
| | | TNT7A | 42.000 | | 1.61 | 67.62 | 1.40 | 0.59 | 1.61 | B | I | 27.67 | 0.95 | 3.48 | B | I | 55.33 | 1.30 | 0.59 | 1.84 | B | I | 27.67 | |
| | | TNT7B | 42.000 | | 1.67 | 70.14 | 1.40 | 0.59 | 1.67 | B | I | 27.67 | 0.95 | 3.28 | B | I | 55.33 | 1.30 | 0.59 | 1.92 | B | I | 27.67 | |
| | | TNAGRIT4 | 43.000 | | 1.58 | 67.94 | 1.40 | 0.59 | 1.58 | B | I | 27.67 | 0.95 | 3.15 | B | I | 55.33 | 1.30 | 0.59 | 1.81 | B | I | 27.67 | |
| TNAGT5A | 45.000 | | 1.49 | 67.05 | 1.40 | 0.59 | 1.49 | B | I | 27.67 | 0.95 | 3.15 | B | I | 55.33 | 1.30 | 0.59 | 1.70 | B | I | 27.67 | | | |
| TNAGT5B | 45.000 | | ③ | 1.46 | 65.70 | 1.40 | 0.59 | 1.46 | B | I | 27.67 | 0.95 | 2.98 | B | I | 55.33 | 1.30 | 0.59 | 1.67 | B | I | 27.67 | | |
| FATIGUE | HL-93 (INVENTORY) | γ _{LL} =0.75 | | -- | | | | | | | | | | | | | | | | | | | | |

LOAD FACTORS:

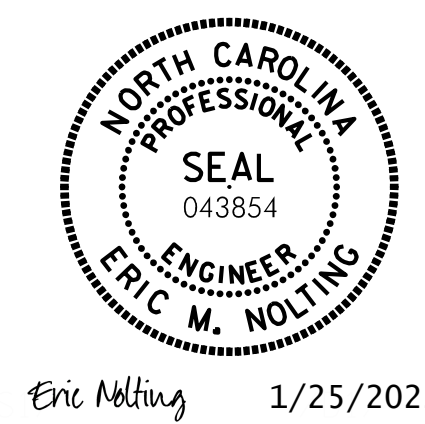
| | | | |
|-------------------------------------|-------------|-----------------|-----------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ _{DC} | γ _{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE II | 1.00 | 1.00 |

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.
COMMENTS:
 FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DESIGN DOES NOT INCLUDE FATIGUE-PRONE DETAILS.
 RATING IS PROVIDED FOR BEAMS 6 THROUGH 9 OF THE WIDENING ONLY.

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| # 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 |

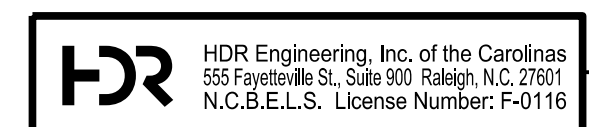


PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 68+65.75± -L-RT-
 SHEET 5 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**GENERAL DRAWING
 LRFR SUMMARY FOR
 STEEL GIRDERS
 (NON-INTERSTATE TRAFFIC)**

| REVISIONS | | | | | | SHEET NO. S03R-05 |
|-----------|-----|-------|-----|-----|-------|----------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | -- | -- | 3 | -- | -- | TOTAL SHEETS 61 |
| 2 | -- | -- | 4 | -- | -- | |



Eric Nolting 1/25/2022
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

| | | | |
|---------------------------|--------------------|----------------------------|--------------------|
| DES BY: <u>E. NOLTING</u> | DATE: <u>07/21</u> | DWG BY: <u>B. PETERSON</u> | DATE: <u>07/21</u> |
| DES CHK: <u>B. ROGERS</u> | DATE: <u>07/21</u> | CHK BY: <u>E. NOLTING</u> | DATE: <u>07/21</u> |

PLOT DRIVER: NCDOT_STRUCTURES_DEFAULT_PLOTTER.plt
 PENTABLE: NCDOT_STRUCTURES_DEFAULT_PEN.tbl
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