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

| LEVEL | | VEHICLE | WEIGHT (W) (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 | | | | | |
| | | | | | | | LIVELOAD FACTORS | 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) | LIVELOAD FACTORS | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | |
| DESIGN LOAD RATING | | HL-93(Inv) | N/A | **1** | 1.014 | -- | 1.75 | 0.269 | 1.04 | 70' | EL | 34.482 | 0.608 | 1.1 | 70' | EL | 3.448 | 0.80 | 0.269 | **1.01** | 70' | EL | **34.482** | |
| | | HL-93(Opr) | N/A | -- | 1.355 | -- | 1.35 | 0.269 | 1.35 | 70' | EL | 34.482 | 0.608 | 1.43 | 70' | EL | 3.448 | N/A | -- | -- | -- | -- | -- | |
| | | HS-20(Inv) | 36.000 | **2** | 1.315 | 47.356 | 1.75 | 0.269 | 1.36 | 70' | EL | 34.482 | 0.608 | 1.38 | 70' | EL | 3.448 | 0.80 | 0.269 | **1.32** | 70' | EL | **34.482** | |
| | | HS-20(Opr) | 36.000 | -- | 1.757 | 63.236 | 1.35 | 0.269 | 1.76 | 70' | EL | 34.482 | 0.608 | 1.79 | 70' | EL | 3.448 | N/A | -- | -- | -- | -- | -- | |
| LEGAL LOAD RATING | SV | SNSH | 13.500 | -- | 2.938 | 39.656 | 1.4 | 0.269 | 3.78 | 70' | EL | 34.482 | 0.608 | 4.12 | 70' | EL | 3.448 | 0.80 | 0.269 | 2.94 | 70' | EL | 34.482 | |
| | | SNGARBS2 | 20.000 | -- | 2.203 | 44.052 | 1.4 | 0.269 | 2.84 | 70' | EL | 34.482 | 0.608 | 2.93 | 70' | EL | 3.448 | 0.80 | 0.269 | 2.20 | 70' | EL | 34.482 | |
| | | SNAGRIS2 | 22.000 | -- | 2.092 | 46.016 | 1.4 | 0.269 | 2.69 | 70' | EL | 34.482 | 0.608 | 2.72 | 70' | EL | 3.448 | 0.80 | 0.269 | 2.09 | 70' | EL | 34.482 | |
| | | SNCOTTS3 | 27.250 | -- | 1.462 | 39.844 | 1.4 | 0.269 | 1.88 | 70' | EL | 34.482 | 0.608 | 2.06 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.46 | 70' | EL | 34.482 | |
| | | SNAGGRS4 | 34.925 | -- | 1.227 | 42.856 | 1.4 | 0.269 | 1.58 | 70' | EL | 34.482 | 0.608 | 1.71 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.23 | 70' | EL | 34.482 | |
| | | SNS5A | 35.550 | -- | 1.2 | 42.646 | 1.4 | 0.269 | 1.54 | 70' | EL | 34.482 | 0.608 | 1.73 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.20 | 70' | EL | 34.482 | |
| | | SNS6A | 39.950 | -- | 1.103 | 44.058 | 1.4 | 0.269 | 1.42 | 70' | EL | 34.482 | 0.608 | 1.58 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.10 | 70' | EL | 34.482 | |
| | | SNS7B | 42.000 | -- | 1.05 | 44.113 | 1.4 | 0.269 | 1.35 | 70' | EL | 34.482 | 0.608 | 1.55 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.05 | 70' | EL | 34.482 | |
| | TTST | TNAGRIT3 | 33.000 | -- | 1.345 | 44.401 | 1.4 | 0.269 | 1.73 | 70' | EL | 34.482 | 0.608 | 1.88 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.35 | 70' | EL | 34.482 | |
| | | TNT4A | 33.075 | -- | 1.352 | 44.717 | 1.4 | 0.269 | 1.74 | 70' | EL | 34.482 | 0.608 | 1.83 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.35 | 70' | EL | 34.482 | |
| | | TNT6A | 41.600 | -- | 1.108 | 46.073 | 1.4 | 0.269 | 1.43 | 70' | EL | 34.482 | 0.608 | 1.65 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.11 | 70' | EL | 34.482 | |
| | | TNT7A | 42.000 | -- | 1.114 | 46.794 | 1.4 | 0.269 | 1.43 | 70' | EL | 34.482 | 0.608 | 1.62 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.11 | 70' | EL | 34.482 | |
| | | TNT7B | 42.000 | -- | 1.155 | 48.526 | 1.4 | 0.269 | 1.49 | 70' | EL | 34.482 | 0.608 | 1.51 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.16 | 70' | EL | 34.482 | |
| | | TNAGRIT4 | 43.000 | -- | 1.097 | 47.174 | 1.4 | 0.269 | 1.41 | 70' | EL | 34.482 | 0.608 | 1.46 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.10 | 70' | EL | 34.482 | |
| | | TNAGT5A | 45.000 | -- | 1.033 | 46.505 | 1.4 | 0.269 | 1.33 | 70' | EL | 34.482 | 0.608 | 1.45 | 70' | EL | 3.448 | 0.80 | 0.269 | 1.03 | 70' | EL | 34.482 | |
| | | TNAGT5B | 45.000 | **3** | 1.02 | 45.905 | 1.4 | 0.269 | 1.31 | 70' | EL | 34.482 | 0.608 | 1.39 | 70' | EL | 3.448 | 0.80 | 0.269 | **1.02** | 70' | EL | **34.482** | |

## LOAD FACTORS:

| DESIGN LOAD RATING FACTORS | LIMIT STATE | $\gamma_{DC}$ | $\gamma_{DW}$ |
|---|---|---|---|
| | 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)

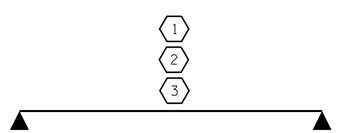
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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




LRFR SUMMARY

FOR SPAN 'B'

PROJECT NO. 17BP.8.R.115

RANDOLPH COUNTY

STATION: 17+24.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
70' CORED SLAB UNIT
75° SKEW
SPAN B
(NON-INTERSTATE TRAFFIC)

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

4/18/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-5 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 20 |

ASSEMBLED BY: B.E. LANNING DATE: 12/16
CHECKED BY : B.E. ATKINSON DATE: 01/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 03/17
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

4/18/2017
11:49:06 AM
User: blanning
Filename: P:\NC Bridges\MI6005_CH Eng.Div. 8 Br. Repl. (6 Bridges)\MI6005.02_Randolph 128\17BP8R115\Structures\401.007.17BP8R115_SMU_LRFR2.dgn

STD. NO. 24LRFR1_75&105S_70L