Release Note

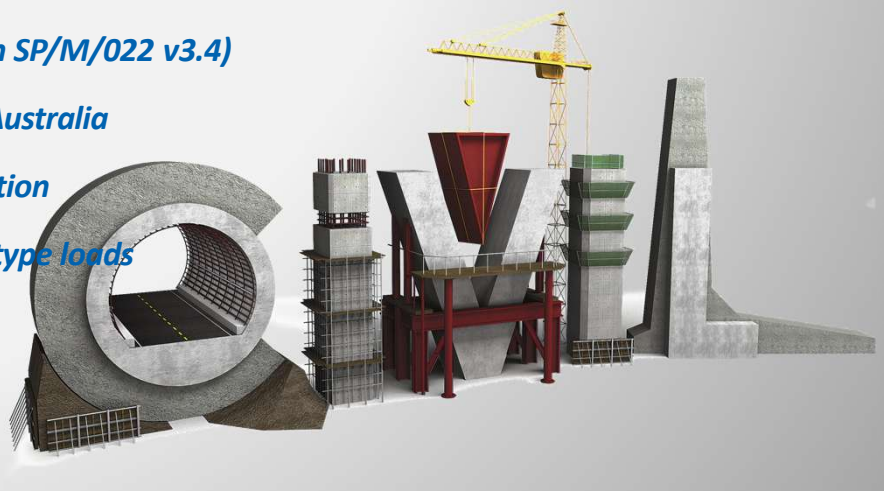
Release Date : July 2025

Product Ver. : CIVIL NX 2025 (v2.1)

Enhancements

Enhancements in CIVIL NX 2025 (v2.1)

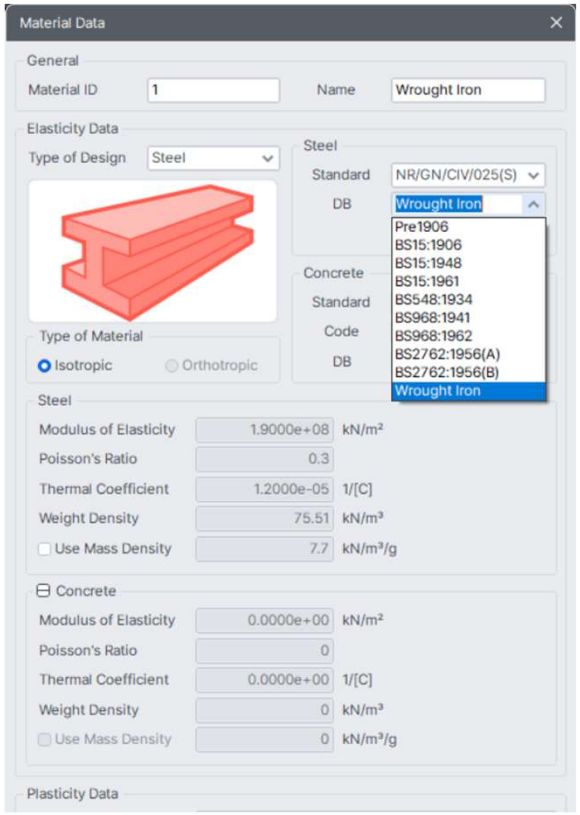
1. *Addition of Material Database for Structural Steel Reinforcement as per NR/GN/CIV/025*
2. *Addition of Section Properties for U-girder Bridge as per NR/GN/CIV/025*
3. *Addition of Moving Load for UK Network Rail Bridge Assessment as per NR/GN/CIV/025*
4. *UK Network Rail Bridge Assessment as per NR/GN/CIV/025*
5. *Automated design support for asymmetric (Type 2) composite steel bridges(Eurocode, AASHTO)*
6. *RC design support for US railway bridges(Based on AREMA design code)*
7. *Update PSC section design criteria for Australia to the latest 2024 standard*
8. *Add California-specific provisions from AASHTO LRFD*
9. *Auto-generate Load combination (RC) as per TMH07 : 1981*
10. *PSC Design as per TMH07-3 : 1989*
11. *Significantly Improved Excel Design Report Generation Speed*
12. *Moving patch load analysis as per Eurocode, BS & NZ traffic loads*
13. *Addition of evaluation truck loads for existing bridges in New Zealand(Based on SP/M/022 v3.4)*
14. *Addition of special permit trucks for load rating of existing bridges in Western Australia*
15. *Enhancement of Australian moving load options: Add lateral offset distance option*
16. *Enhancement of Load All Model 1 in the UK rating system to support envelope type loads*
17. *Addition of vehicle database for 46 US states*
18. *Addition of cross-section databases for the US and Canada*
19. *Batch output for tendon loss table by construction stage and tendon group*



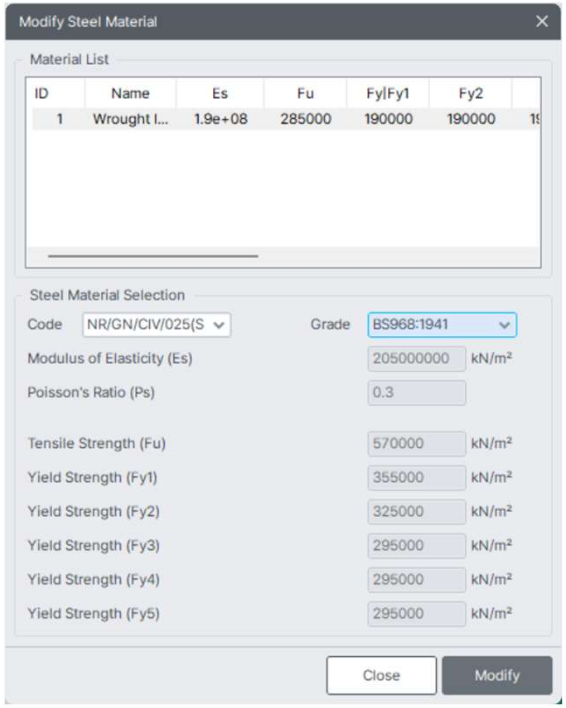
1. Addition of Material Database for Structural Steel Reinforcement as per *NR/GN/CIV/025*

- To support bridge assessment in accordance with NR/GN/CIV/025, MIDAS Civil now includes a comprehensive set of steel and wrought iron materials used in UK railway structures from the pre-1906 era onward.
- **10 new material types** added to the database, including: Wrought Iron, **BS 2762:1956(A), BS 2762:1956(B), BS968:1962, BS968:1941, BS548:1934, BS15:1961, BS15:1948, BS15:1906, Pre1906**. This includes definition of **Yield strength values** by thickness.
- This addition enables accurate structural assessments for **existing UK railway bridges**, including heritage structures and simplifies compliance with Network Rail's material classification and evaluation requirements.

- ***Properties > Material Properties***
- ***Rating > Steel Bridge > NR/GN/CIV/025 > Modify Steel Material***



Material Properties

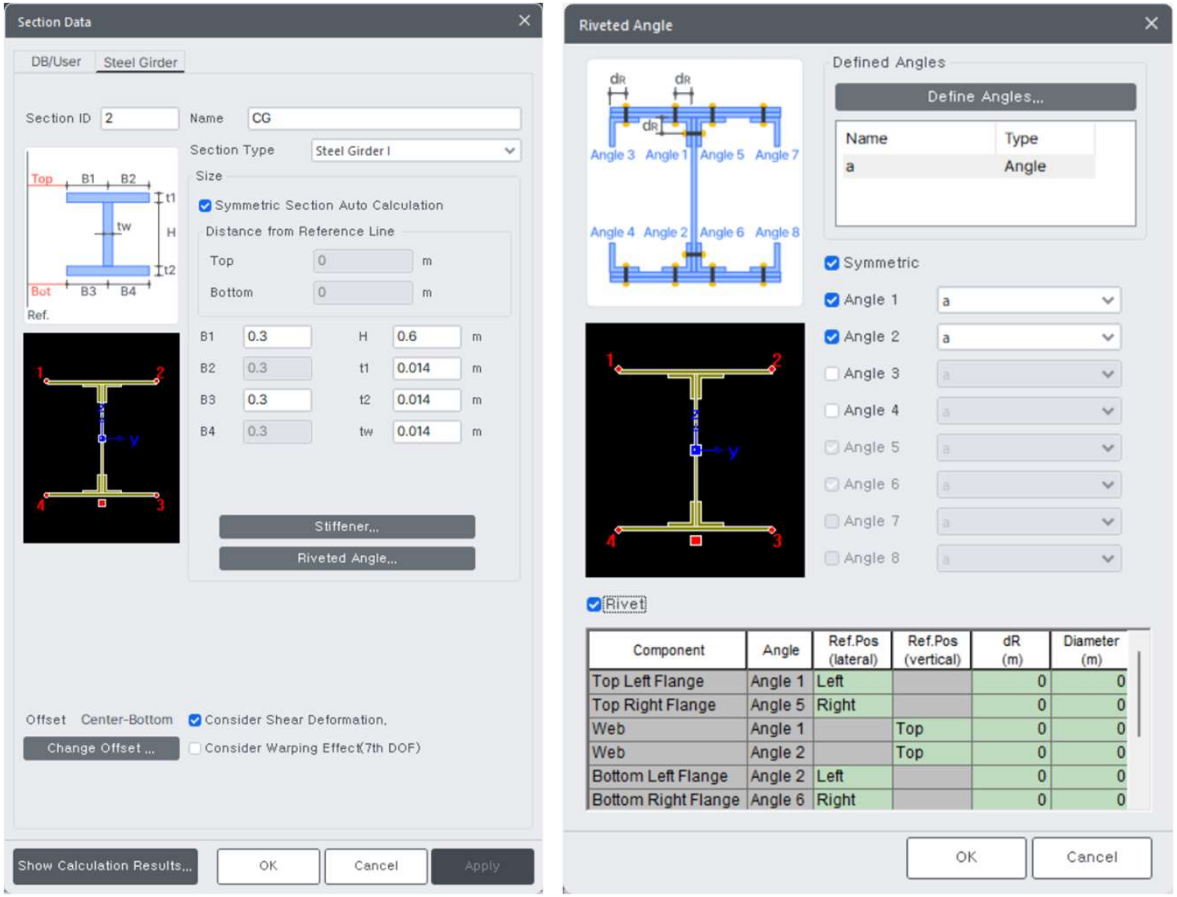


Modify Steel Material

2. Addition of Section Properties for U-girder Bridge as per *NR/GN/CIV/025*

- Riveted steel plate girders can be defined, including detailed configuration of riveted angles. By accounting for rivet holes, the software automatically computes the net stiffness, which is then applied in the assessment for more accurate structural evaluation.

▪ ***Properties*** > ***Section Properties***



Riveted Steel Plate Girder

3. Addition of Moving Load for UK Network Rail Bridge Assessment as per *NR/GN/CIV/025*

- MIDAS Civil now supports Network Rail Standards-based moving load configurations for bridge assessment, in accordance with NR/GN/CIV/025. This enhancement ensures compliance with UK railway bridge evaluation guidelines and expands the platform's global code coverage.

- **Key Features:**

  Vehicle Types Included:

  Equivalent Uniformly Distributed Load (EUDL)

  RAI (RA1 ~ RA15)

  Load Wagon (Convoy Mode supported)

  Wagon Type D4 (as per UIC700 standard)

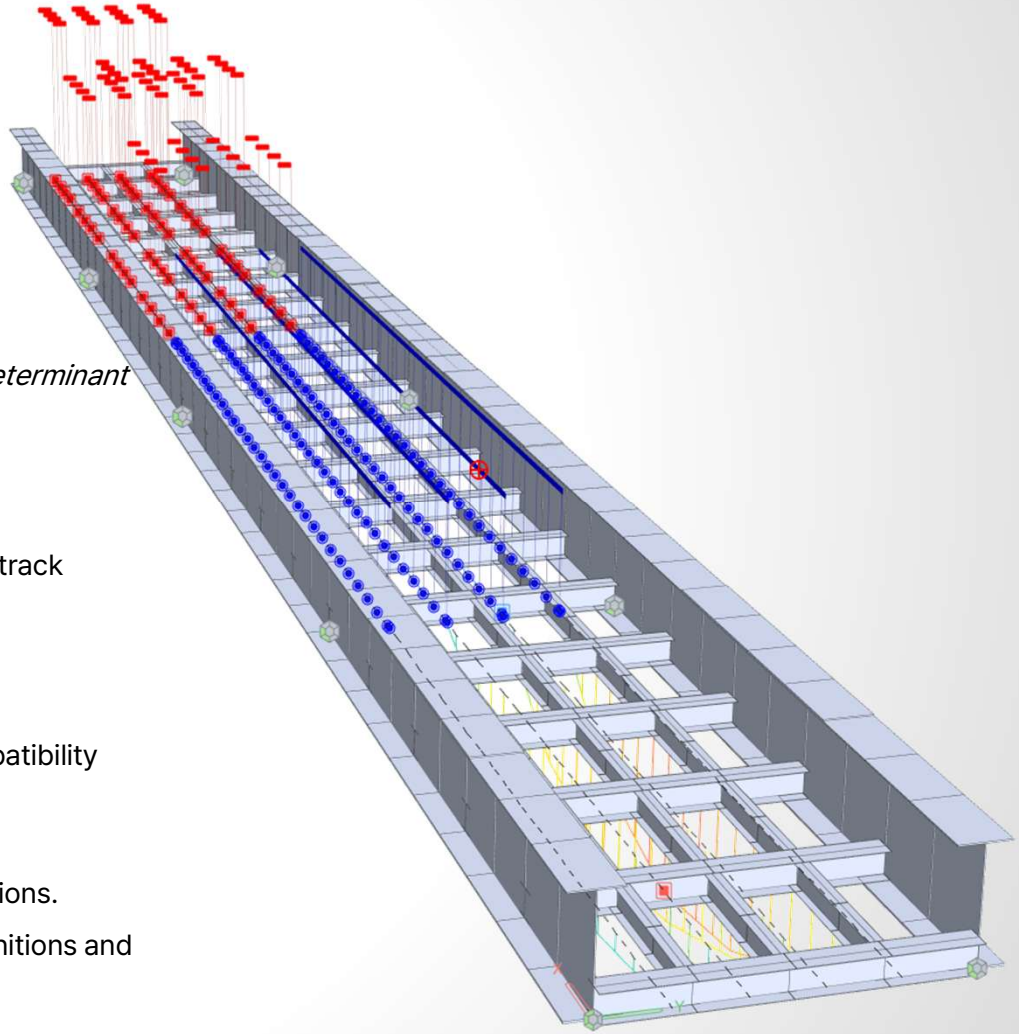
  Dynamic Factor Configuration:

  Dynamic Amplification Factors (DAF) can be automatically calculated by defined *Determinant Length* and *group-based* selection.

  This enables accurate load effect estimation under various speed rail conditions.

  Track Factor Input:

  Track Factor can be defined per lane in the Moving Load Case for consistent multi-track evaluation.



- **Benefits:**

  EUDL (Equivalent Uniformly Distributed Load) automatically provided, enhancing compatibility with simplified evaluation methods.

  Provides detailed moving load simulation tailored to UK railway infrastructure.

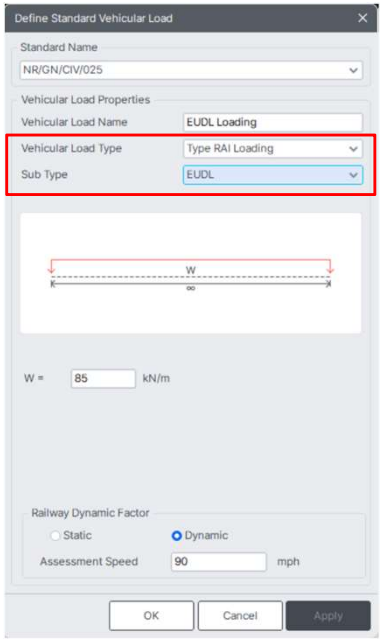
  Allows for accurate modeling of various speed rail effects through Dynamic Factor options.

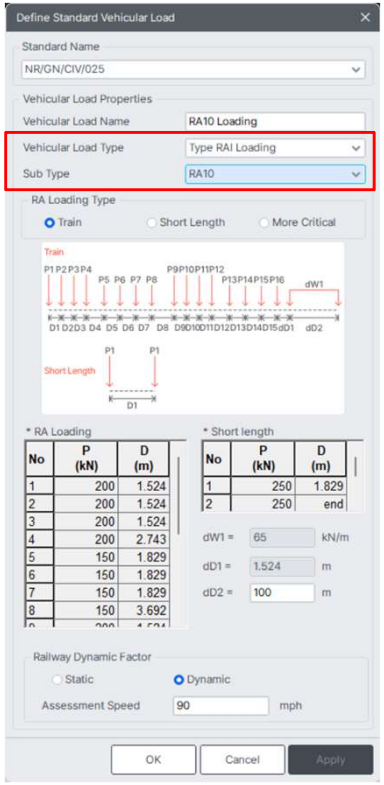
  Enables bridge engineers to perform assessments using familiar UK-specific load definitions and parameters.

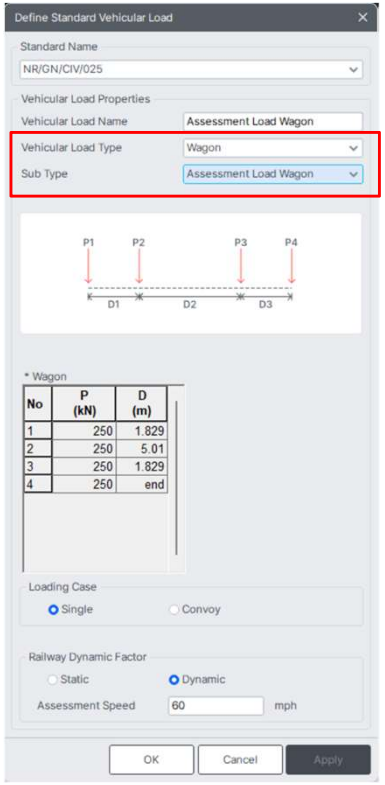
3. Addition of Moving Load for UK Network Rail Bridge Assessment as per *NR/GN/CIV/025*

- A new Railway Lane type has been added to support Network Rail moving load assessments, allowing users to define track-specific configurations aligned with UK railway standards.
- The following vehicle types have been newly added: Equivalent Uniformly Distributed Load (EUDL), RA1–RA15 load types, Load Wagon with Convoy Mode, and Wagon Type D4 in accordance with the UIC700 standard.

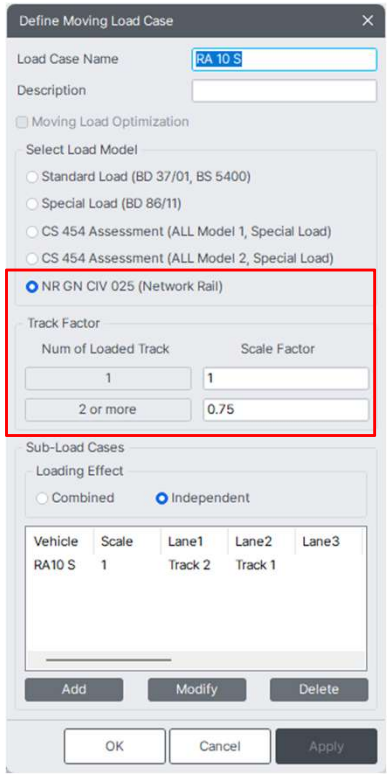
- ***Load > Moving Loads > BS***
- ***Load > Moving Loads > Traffic Line/Surface Lanes***
- ***Load > Moving Loads > Vehicles***
- ***Load > Moving Loads > Moving Load Cases***



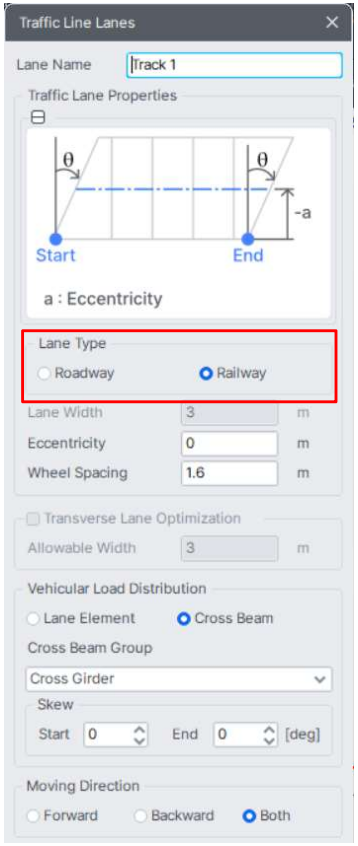




Train Database for UK Network Rail Bridge



Moving Load Cases

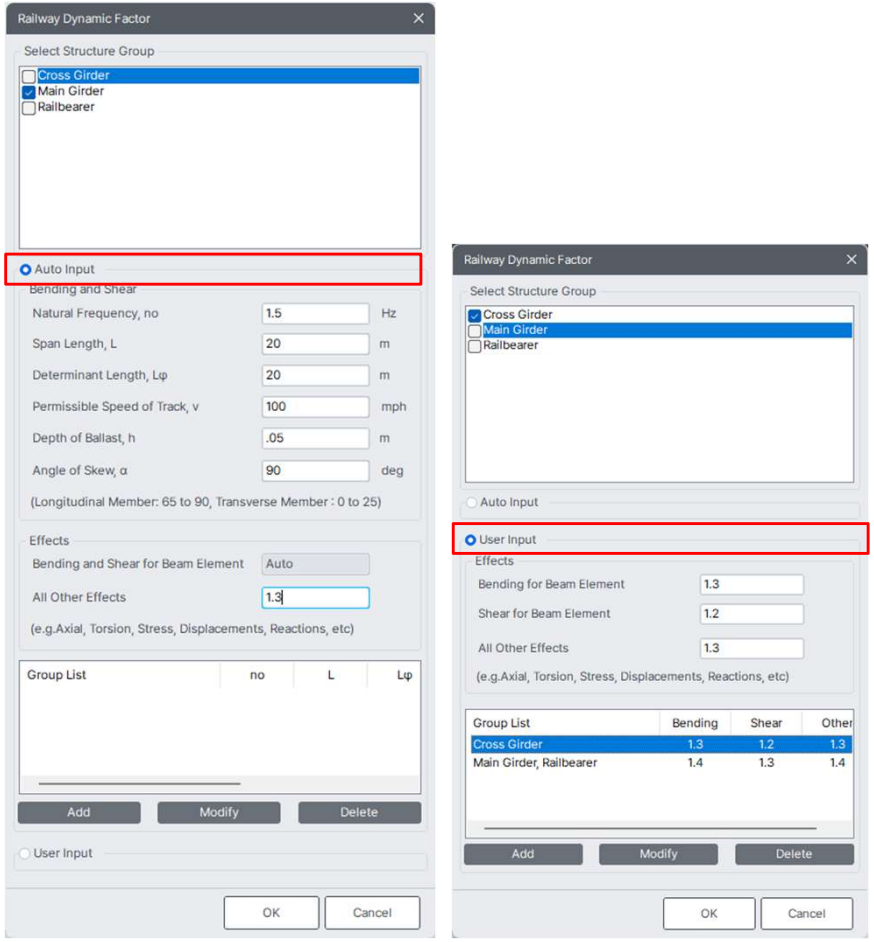


Traffic Line Lanes

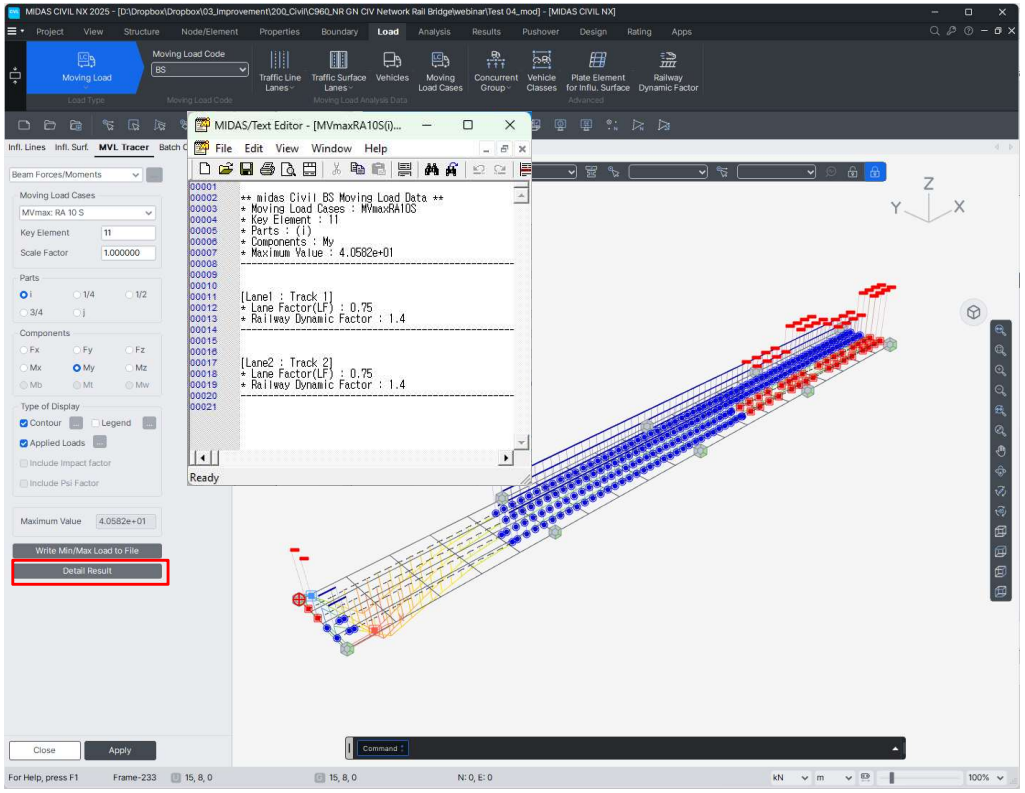
3. Addition of Moving Load for UK Network Rail Bridge Assessment as per *NR/GN/CIV/025*

- Dynamic Factor in accordance with NR/GN/CIV/025 can now be applied either by automatic calculation based on determinant length or through user-defined input, providing flexibility and compliance with UK railway standards.
- The calculated Dynamic Factor can be checked in both the table view and the detail report of the Moving Load Tracer.

▪ ***Load > Moving Loads > Railway Dynamic Factor***



Dynamic Factor



Moving Load Tracer

4. UK Network Rail Bridge Assessment as per *NR/GN/CIV/025*

- MIDAS Civil now supports a fully automated assessment process for railway bridge structures in accordance with Network Rail standards (NR/GN/CIV/025), including the ability to generate structured Excel reports summarizing all verification results.

- **Key Features:**

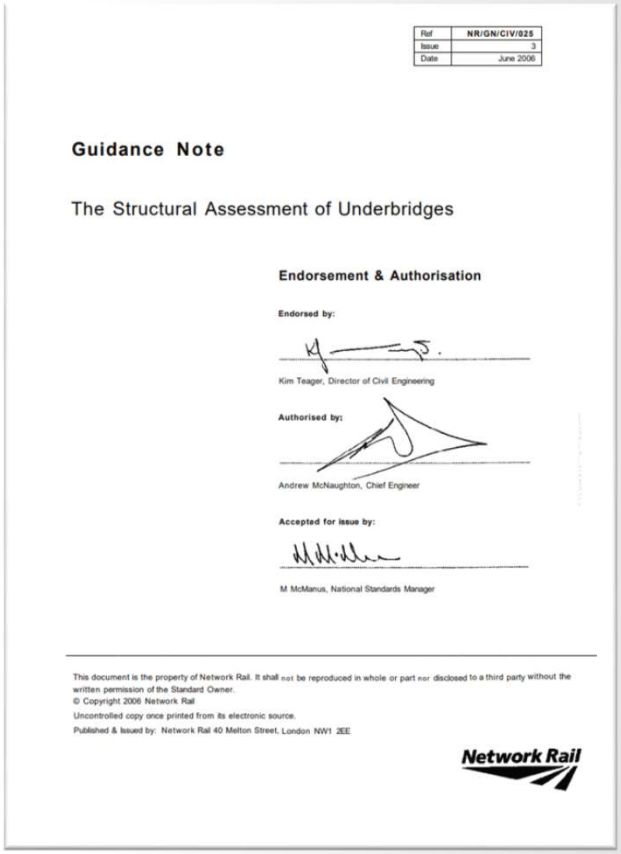
  Automated Assessment Workflow
  Perform Ultimate Limit State checks (Flexure, Shear, Longitudinal Shear, Intermediate and Bearing Stiffener) on main girders, cross girders, rail bearers, and stiffeners automatically after analysis.

  Code Selection Flexibility
  Assessment can be carried out based on either **NR/GN/CIV/025** or **BS 5400 Part 3**, allowing users to choose the appropriate code depending on project requirements.

  Utilisation Factor Calculation
  Includes auto-calculation of Utilisation Factors based on RA rating criteria, with support for historic steel materials (e.g., Wrought Iron, Early Steel).

  Excel Report Output
  A detailed **Excel-format report** is generated, capturing all input parameters, applied load cases (e.g., RA1–RA15, EUDL), rating factors, section capacities, and final utilisation results.

  Supports Various Design Inputs
  Corrosion depth, riveted angle, effective length, and U-girder specific parameters are fully reflected in both calculation and reporting.



Ref	NR/GN/CIV/025
Issue	3
Date	June 2006

Guidance Note

The Structural Assessment of Underbridges

Endorsement & Authorisation

Endorsed by:

Kim Teager, Director of Civil Engineering

Authorised by:

Andrew McNaughton, Chief Engineer

Accepted for issue by:

M McManus, National Standards Manager

Network Rail

- **Benefits:**

  Streamlines compliance with UK Network Rail bridge assessment procedures.

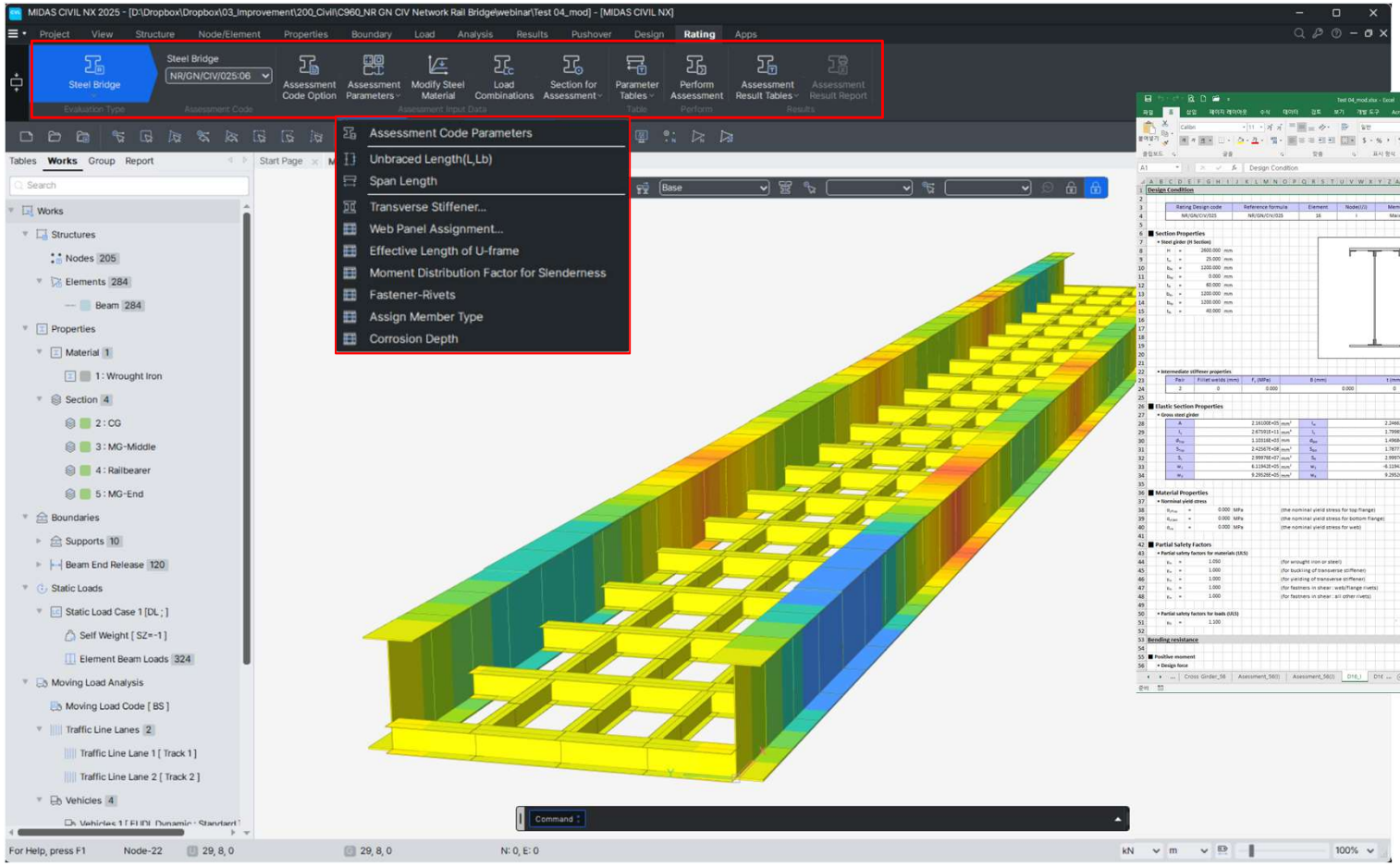
  Minimizes manual input and post-processing by automating the full assessment-to-report pipeline.

  Produces **clear, exportable documentation** for design review, audit, and submission to authorities.

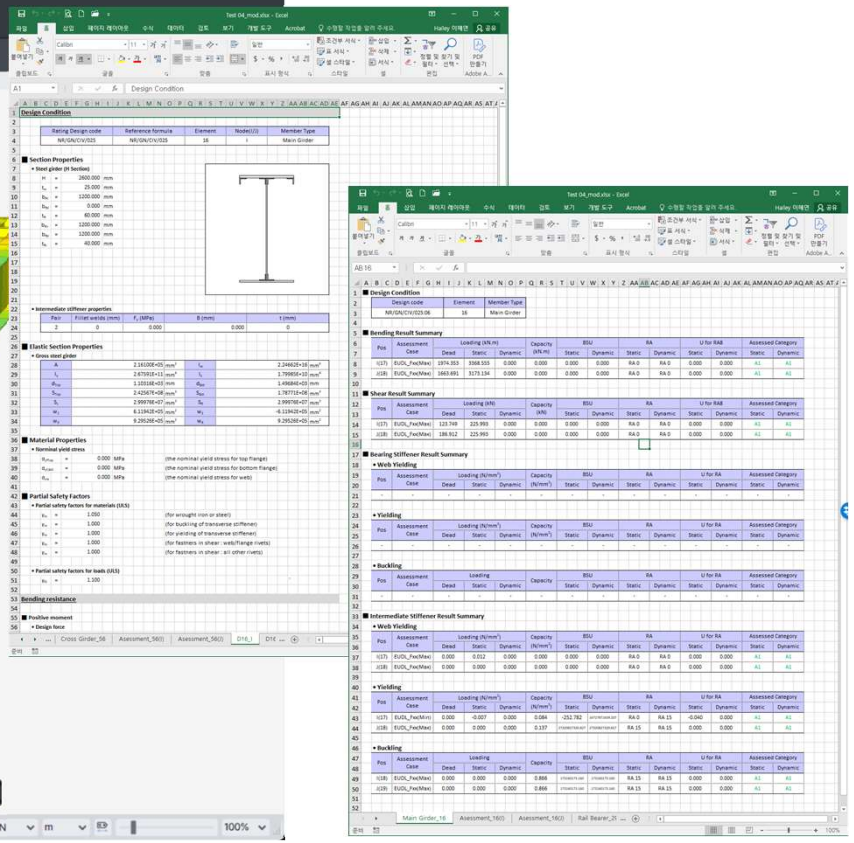
4. UK Network Rail Bridge Assessment as per *NR/GN/CIV/025*

- When **NR/GN/CIV/025** is selected in the **Steel Bridge Rating** menu, all relevant **input and output menus** specific to the Network Rail assessment criteria are displayed.

▪ ***Rating > Steel Bridge > NR/GN/CIV/025***



U-girder Bridge Assessment

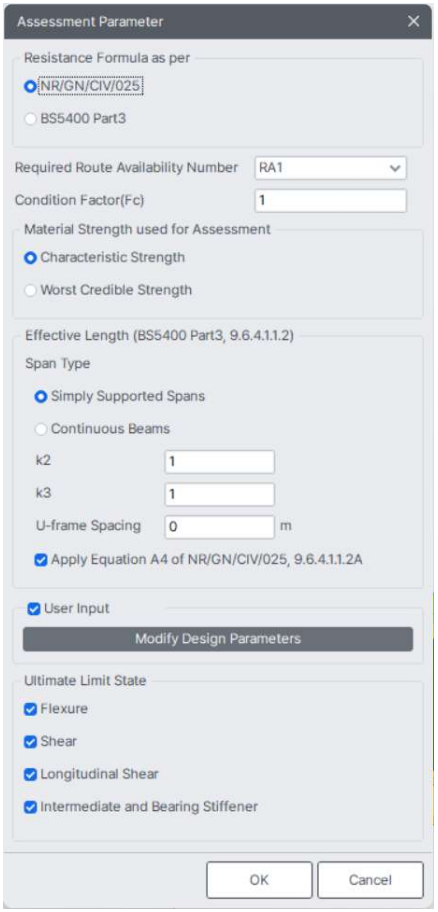


Excel Report

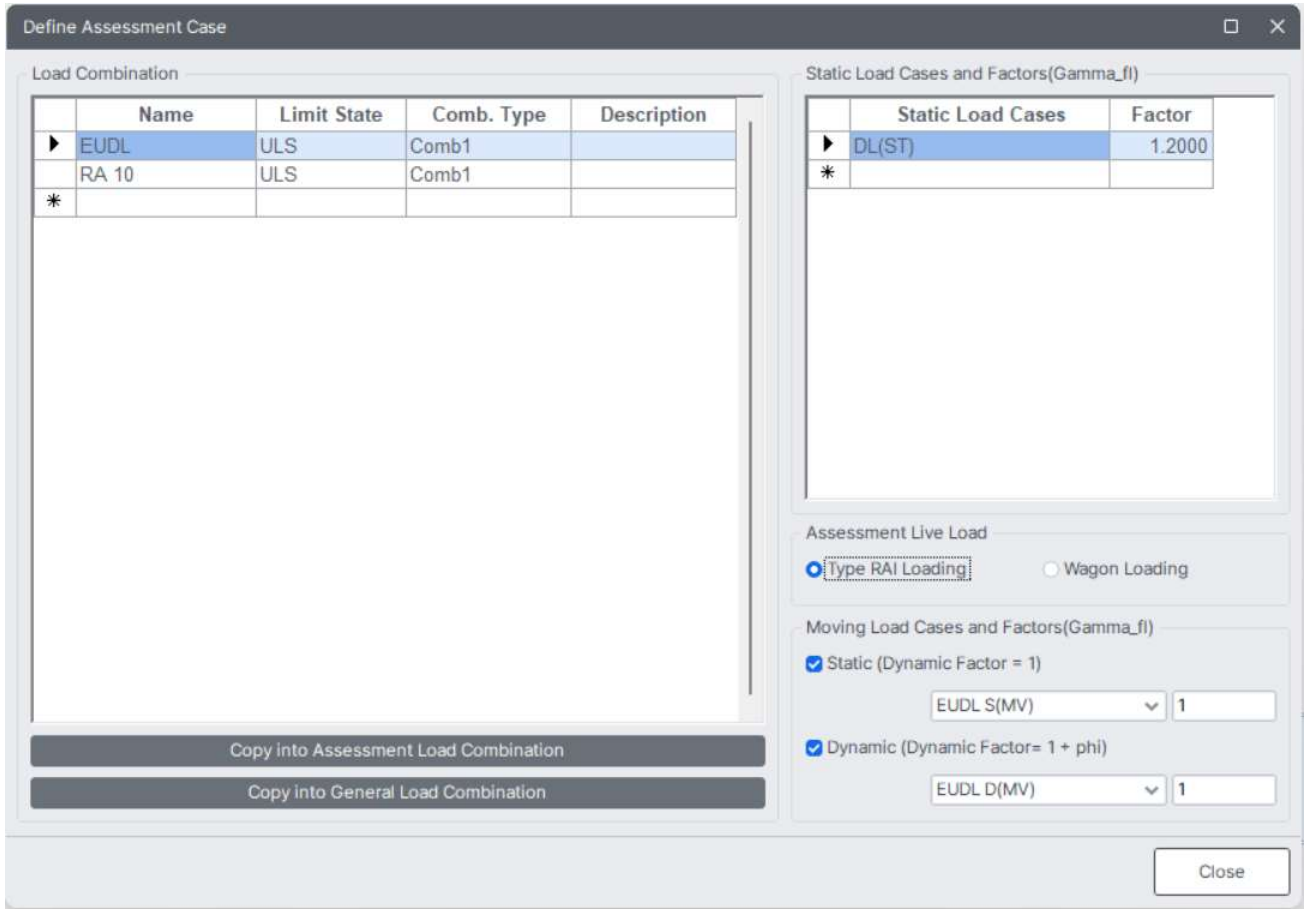
4. UK Network Rail Bridge Assessment as per *NR/GN/CIV/025*

- In Assessment Parameter, Users can modify and apply condition factors, material factors, and other parameters as needed to suit specific project conditions.
- In the **assessment case**, when **static live load**, **dynamic live load**, and **dead load** are defined, the software automatically calculates the **utilisation factor** based on these inputs.

▪ ***Rating > Steel Bridge > NR/GN/CIV/025***



Assessment Parameter

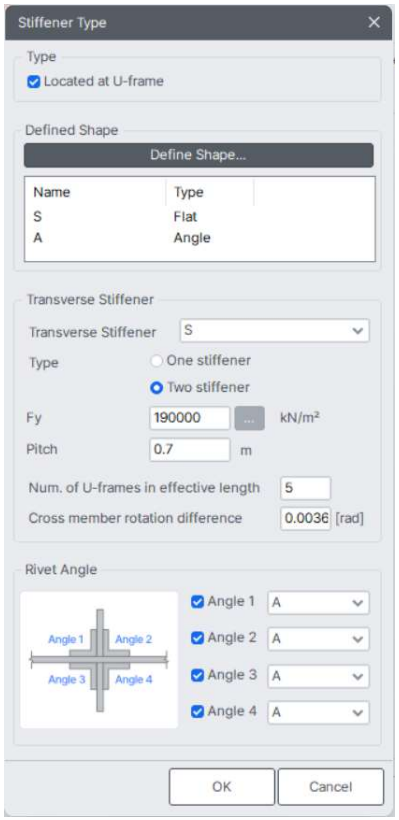


Assessment Case

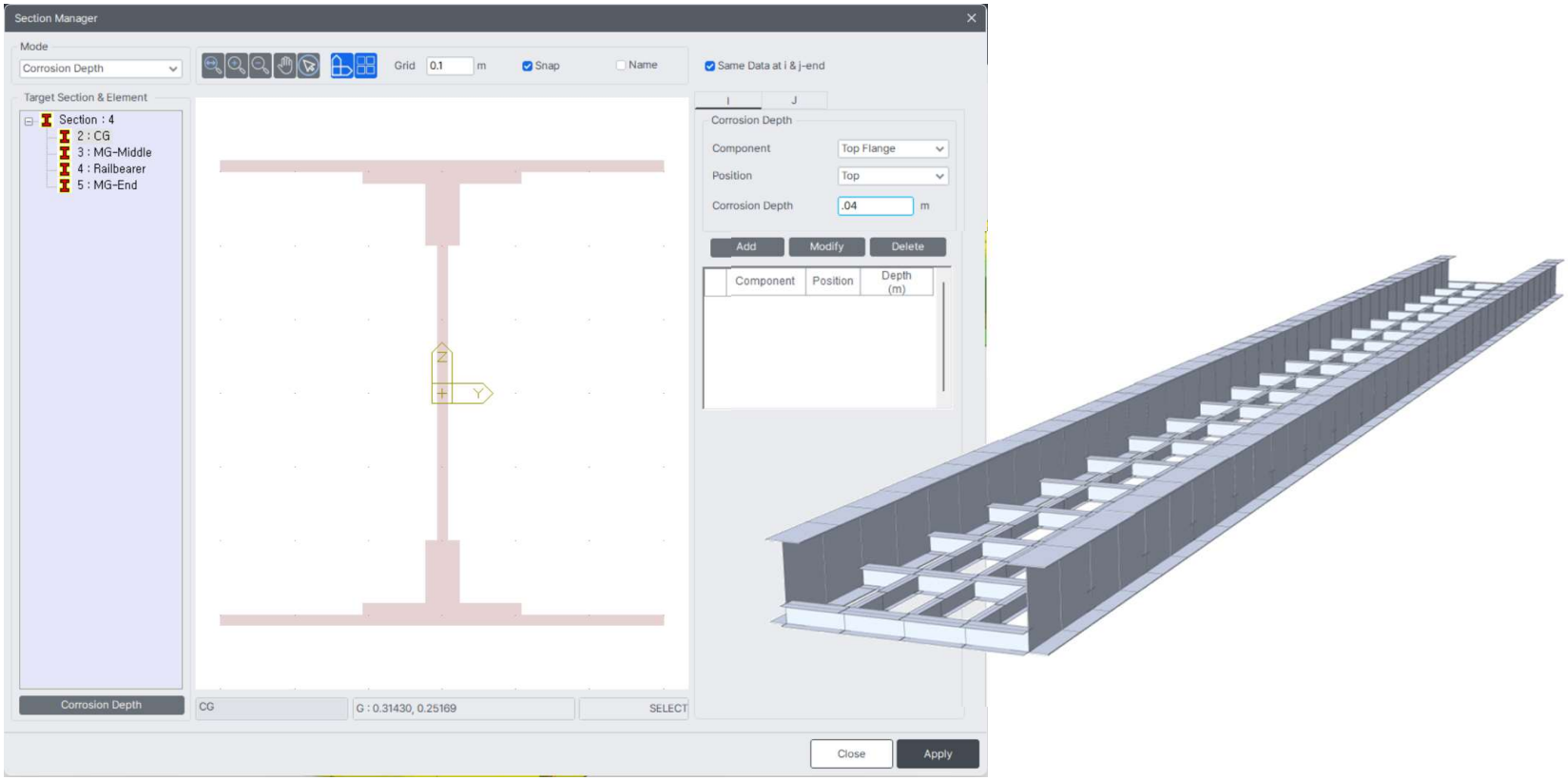
4. UK Network Rail Bridge Assessment as per *NR/GN/CIV/025*

- **Transverse and bearing stiffeners** can be defined, along with **riveted angles** used for their reinforcement. These inputs are considered in the automatic calculation of **section properties**, which are then used directly in the assessment process.
- Assessment can be performed using **net section properties** that account for **corrosion depth**, ensuring more accurate evaluation of deteriorated structures.

▪ ***Rating > Steel Bridge > NR/GN/CIV/025***



Transverse and Bearing Stiffener



Corrosion Depth

4. UK Network Rail Bridge Assessment as per *NR/GN/CIV/025*

- After completing the assessment, results can be reviewed through both the **table view** and a generated **Excel report**.

▪ ***Rating > Steel Bridge > NR/GN/CIV/025***

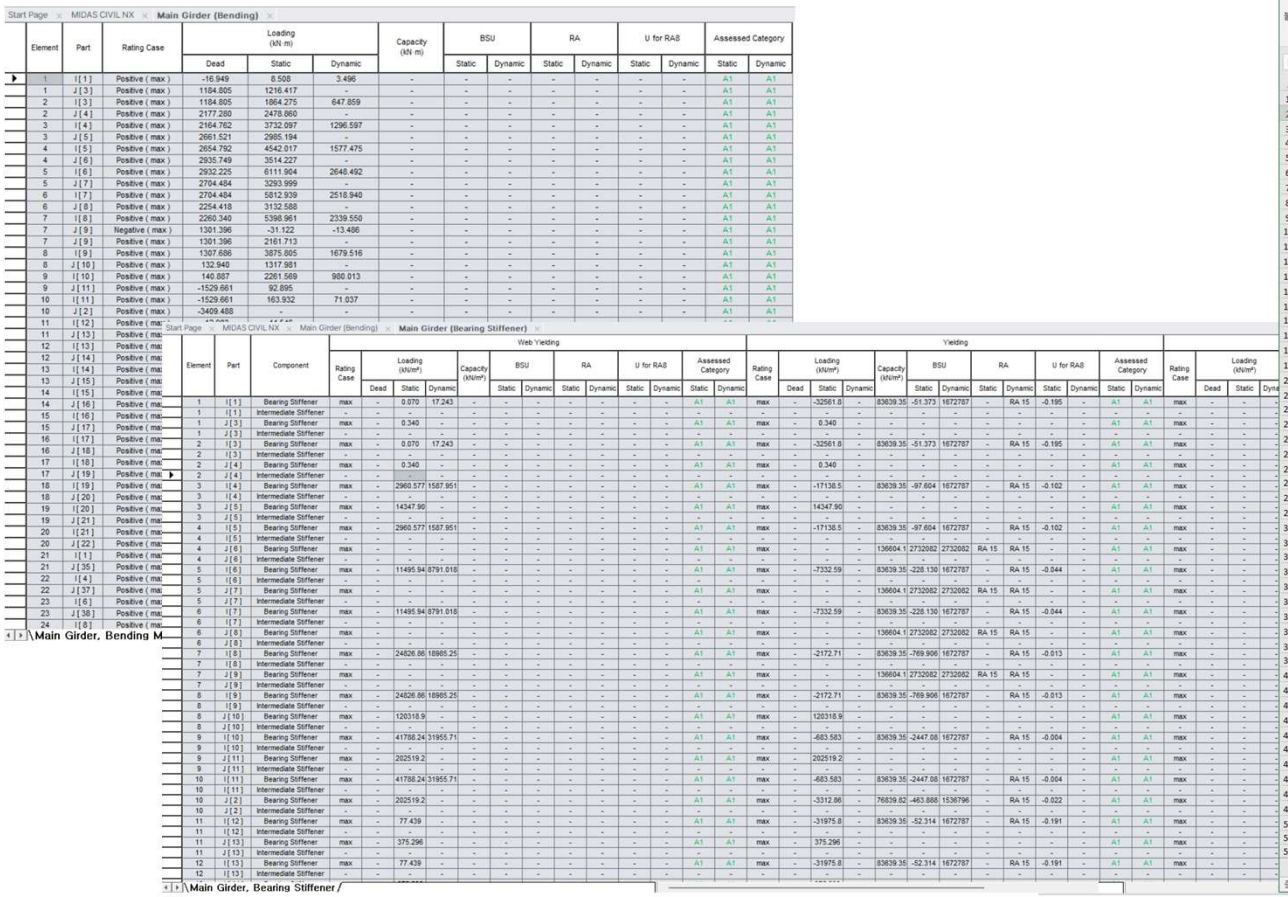
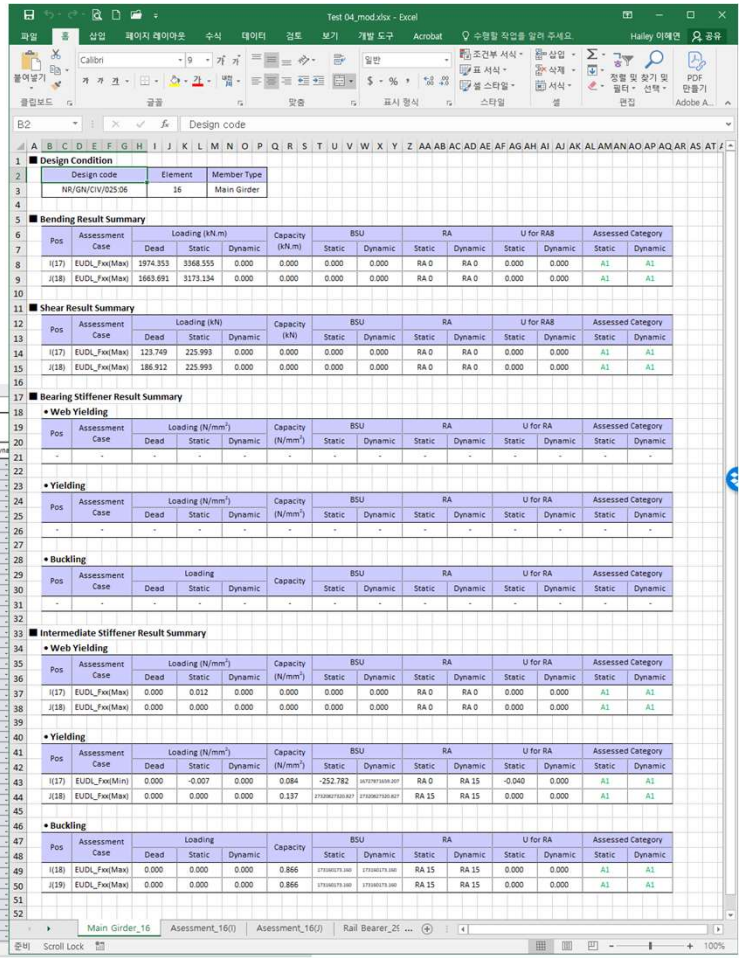


Table Results

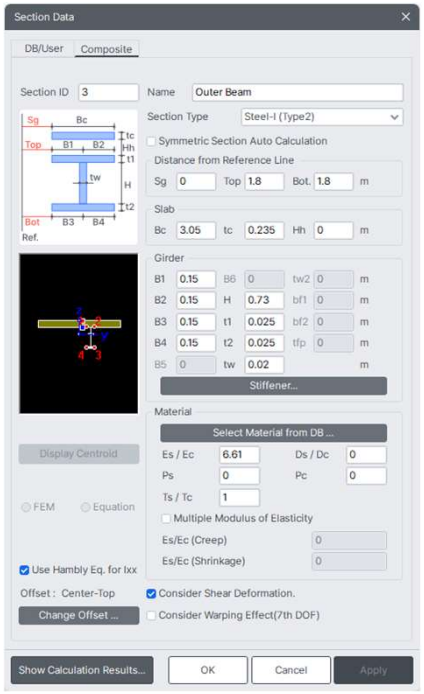


Excel Report

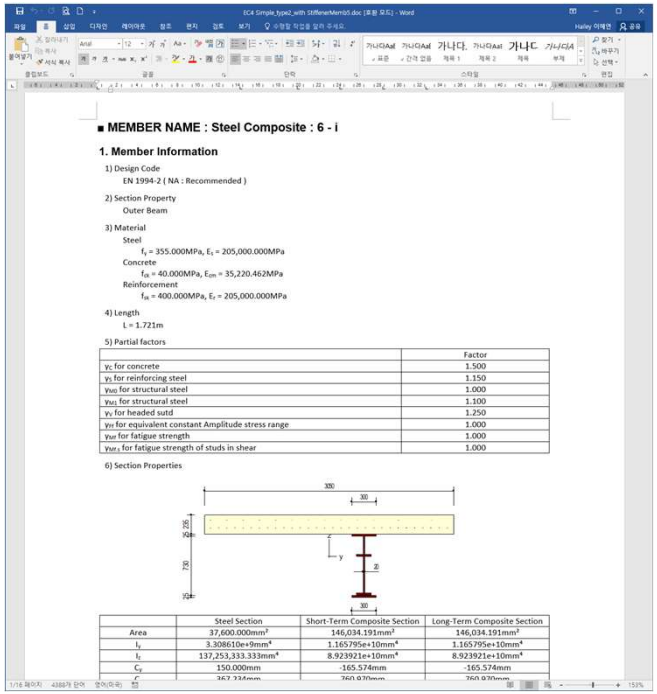
5. Automated design support for asymmetric (Type 2) composite steel bridges as per Eurocode4 & AASHTO LRFD

- In the case of exteria girders in girder bridges, the deck often needs to be modeled asymmetrically. However, previous versions did not support the design of such asymmetric sections in the automatic section design feature.
- Starting from this version, Steel Composite Design now supports asymmetric (Type 2) sections, in addition to the previously supported symmetric sections.
- The supported design codes are Eurocode 4 and AASHTO LRFD, and Type 2 section checks are available for Steel I-girders, Steel Tub girders, and Steel Box girders.

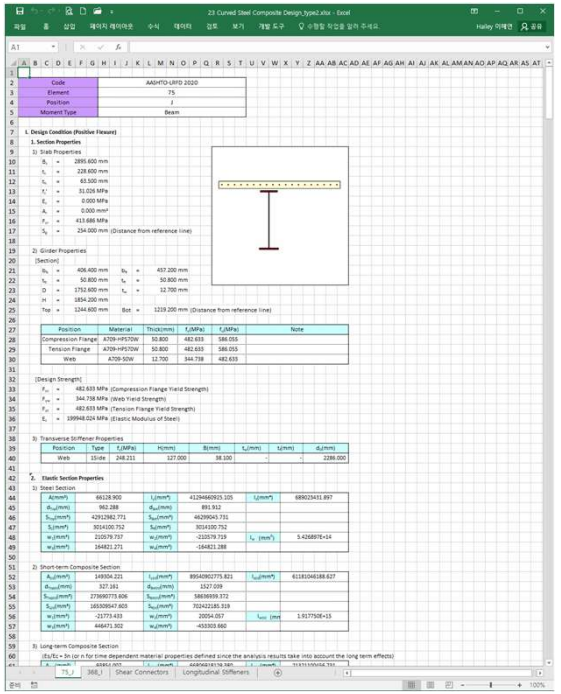
- ***Properties > Section Properties***
- ***Design > Composite Design > EN 1994-2 , AASHTO-LRFD20***



Composite Steel-I (Type2) Section



Steel Composite Design Report as per Eurocode4

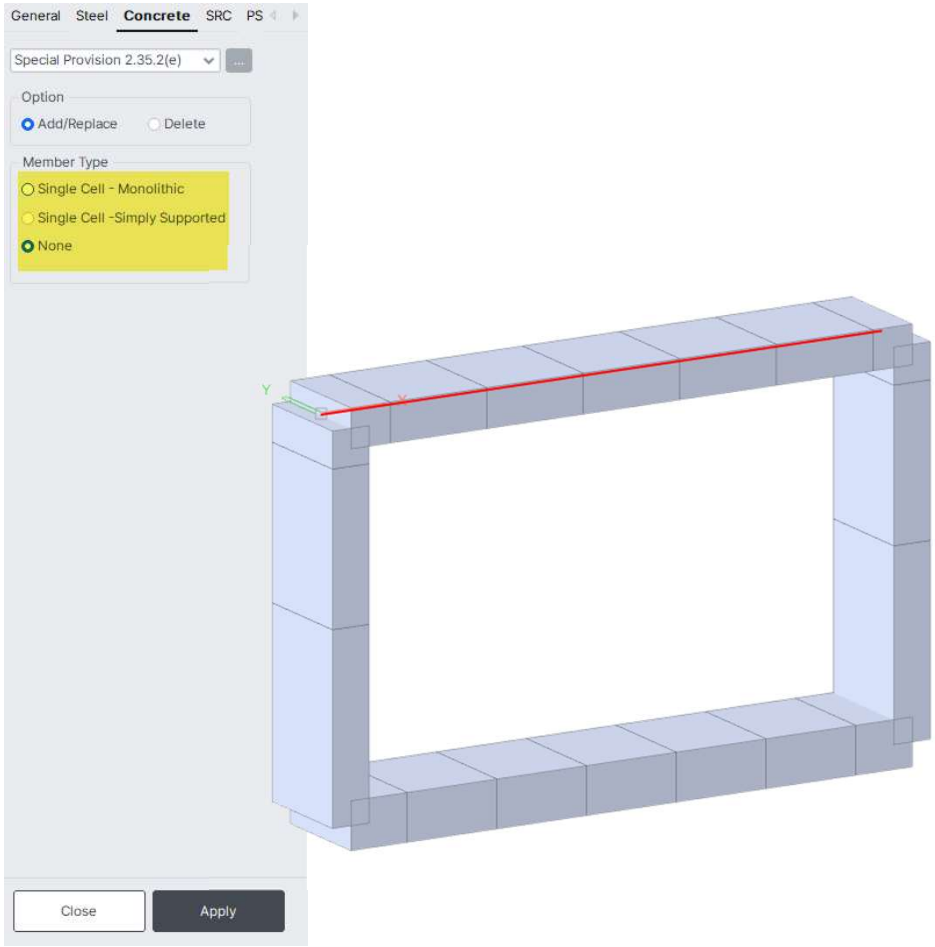


Steel Composite Design Report as per AASHTO LRFD

6. RC Design for 1D Beam & Column as per AREMA 2023

- A new option, “Special Provision 2.35.2(e)” has been added under Design Parameters to specify the type of box culvert.

▪ ***Design > RC Design > Design Parameters > Special Provision 2.35.2(e)***



Special Provision 2.35.2(e)

Concrete Structures and Foundations

$$v_c = 2\left(1 + 0.0005\frac{N_u}{A_g}\right)\sqrt{f'_c} \qquad \textbf{EQ 2-47}$$

$$v_c = 0.17\left(1 + 0.072\frac{N_u}{A_g}\right)\sqrt{f'_c} \qquad \textbf{EQ 2-47M}$$

The quantity $\frac{N_u}{A_g}$ shall be expressed in psi (MPa).

d. For members subject to significant axial tension, shear reinforcement shall be designed to carry the total shear, unless a more detailed analysis is made using

$$v_c = 2\left(1 + 0.002\frac{N_u}{A_g}\right)\sqrt{f'_c} \qquad \textbf{EQ 2-48}$$

$$v_c = 0.17\left(1 + 0.29\frac{N_u}{A_g}\right)\sqrt{f'_c} \qquad \textbf{EQ 2-48M}$$

where:

N_u is negative for tension

the quantity $\frac{N_u}{A_g}$ shall be expressed in psi (MPa).

e. Special provisions for slabs of box culverts. For slabs of box culverts under rail with 18 inches (450 mm) or more of fill (base of rail to top of culvert), shear stress v_c may be computed by:

$$v_c = 2.14\sqrt{f'_c} + 4600\rho\frac{V_u d}{M_u} \qquad \textbf{EQ 2-49}$$

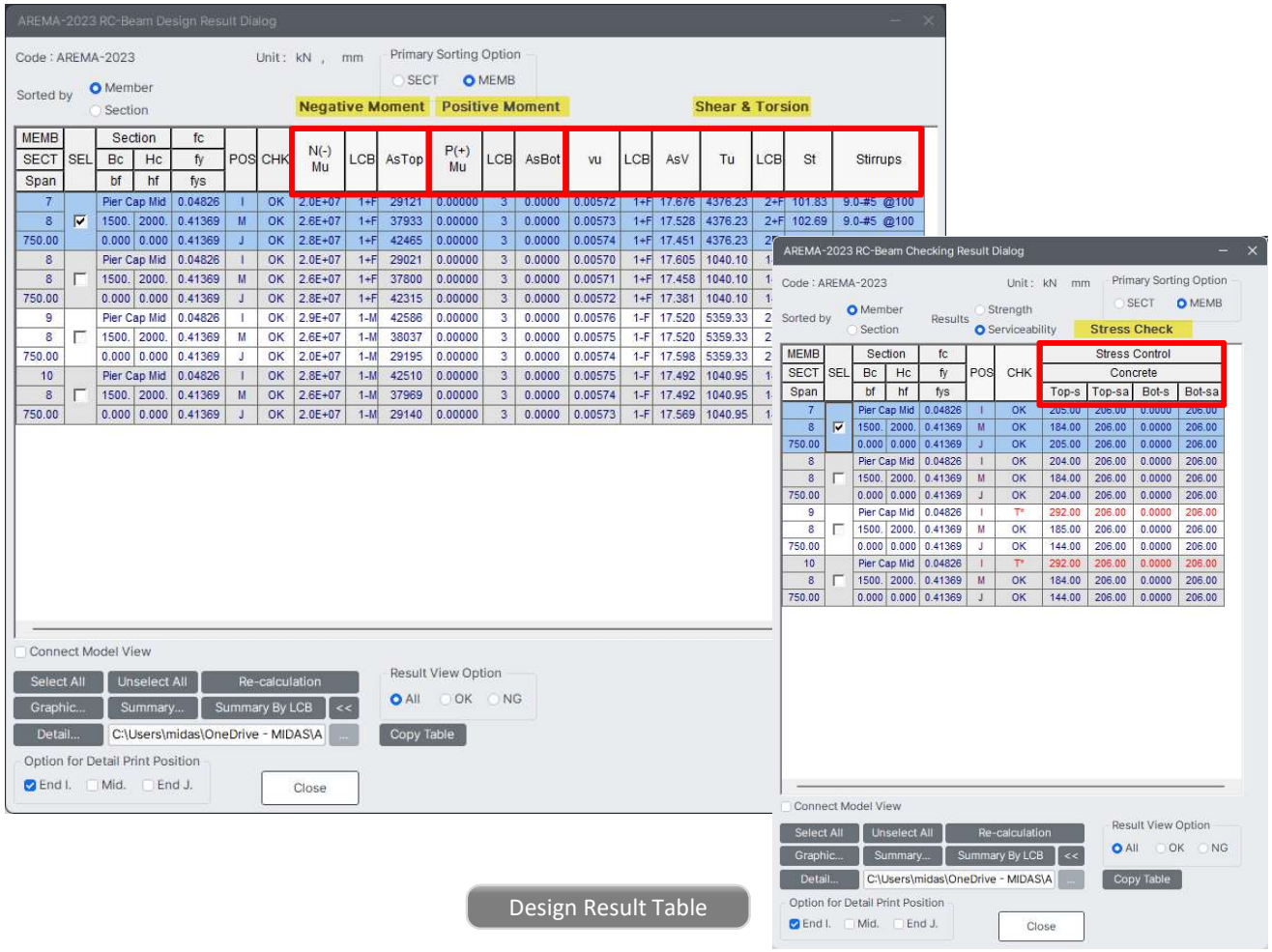
$$v_c = 0.18\sqrt{f'_c} + 32\rho\frac{V_u d}{M_u} \qquad \textbf{EQ 2-49M}$$

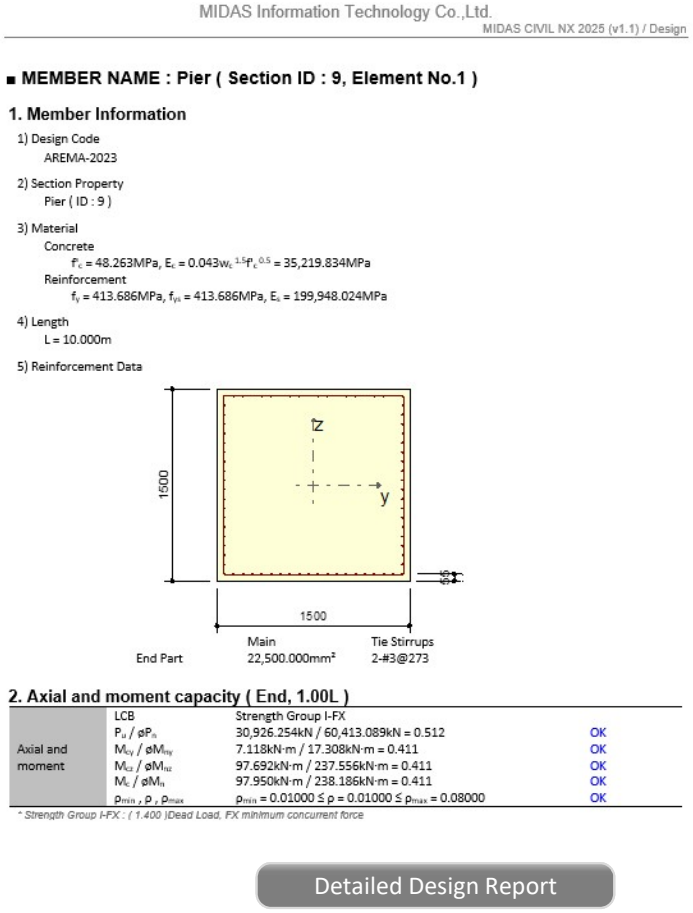
but v_c shall not exceed $4\sqrt{f'_c}$ (or $\frac{1}{3}\sqrt{f'_c}$ in metric). For single cell box culverts only, v_c need not be taken less than $3\sqrt{f'_c}$ (or $\frac{\sqrt{f'_c}}{4}$ in metric) for slabs monolithic with walls or $2.5\sqrt{f'_c}$ (or $\frac{5}{24}\sqrt{f'_c}$ in metric) for slabs simply supported. The quantity $\frac{V_u d}{M_u}$ shall not be taken greater than 1.0, where M_u is factored moment occurring simultaneously with V_u at section considered.

6. RC Design for 1D Beam & Column as per AREMA 2023

- Design and checking of RC frame elements to AREMA 2023 are newly introduced in midas.
- This feature can be applied to RC beam & RC column (T-girder, diaphragm, pier, pier cap & other related substructure components).
- The detailed design report provides calculations in both SI and US units, available in Word format.

▪ ***Design > RC Design > RC Code Design > Beam/Column Design***

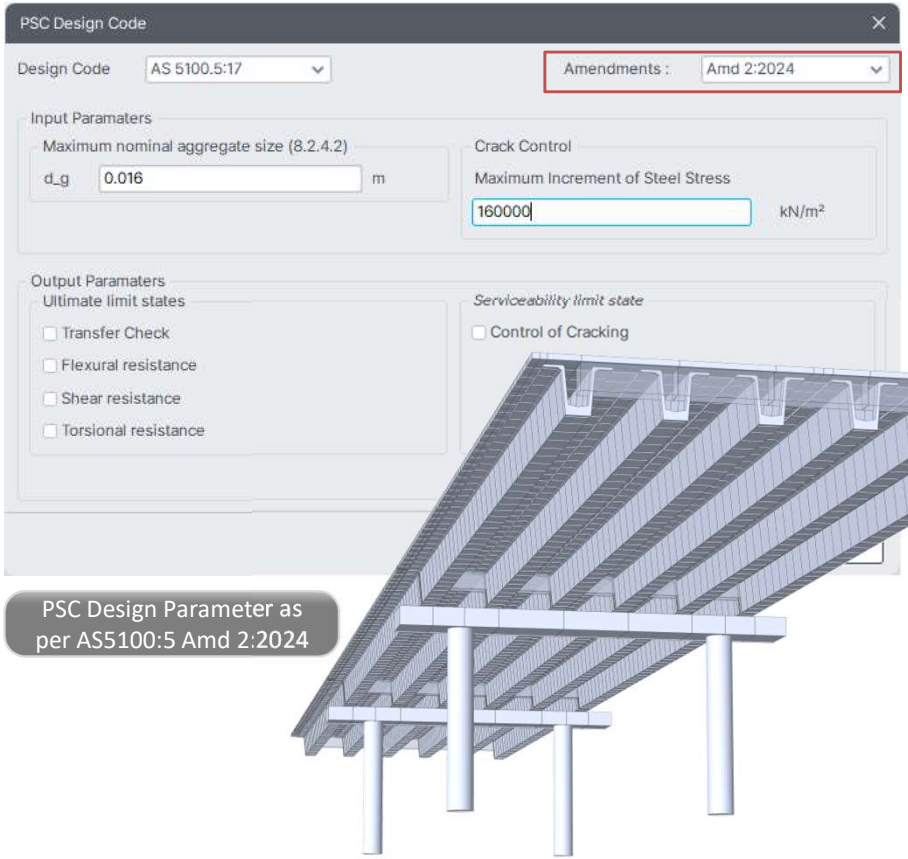




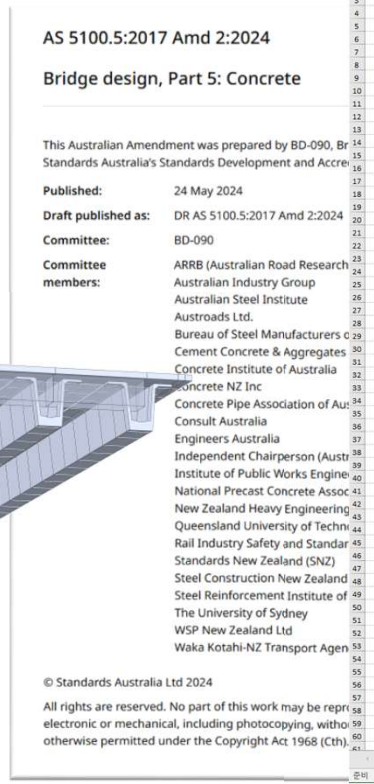
7. Update PSC section design criteria for Australia to the latest 2024 standard

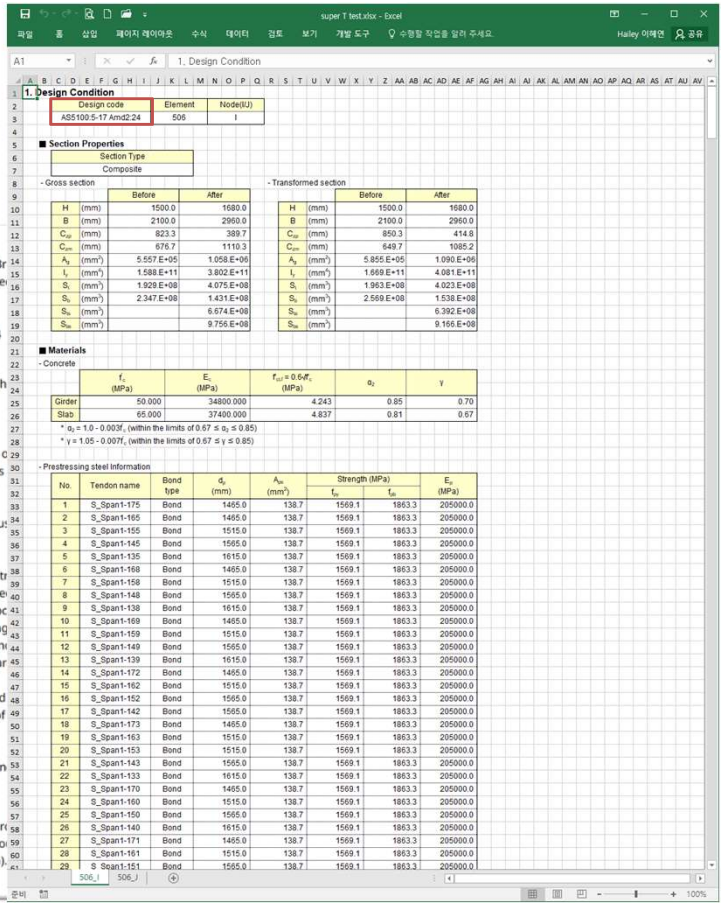
- The PSC Design feature has been updated to support the latest amendment of the Australian bridge design standard: AS 5100.5:2017 Amendment 2024.
- **Key Updates** : Support for the 2024 Amendment is now available in the PSC Design Parameters.
  Updated reinforcing steel material properties in accordance with the new amendment.
  All relevant design equations and checks have been revised to comply with the updated provisions.
- This update ensures that engineers can perform PSC design fully aligned with the most current Australian bridge design standards.

▪ ***Design > PSC Design > AS 5100:5:17 > Amd 2:2024***



PSC Design Parameter as per AS5100:5 Amd 2:2024



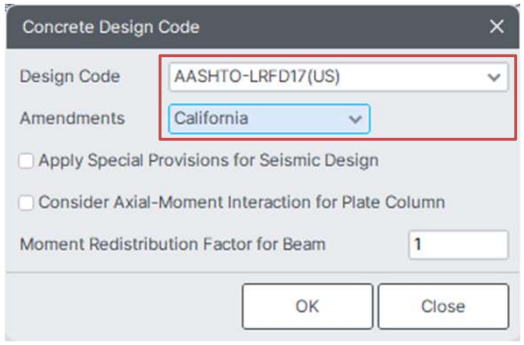


PSC Design Report

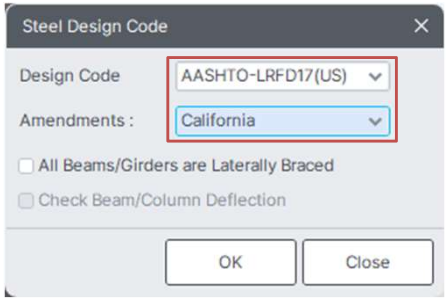
8. Add California-specific provisions from AASHTO LRFD

- To meet the specific requirements of California bridge projects, MIDAS CIVIL NX now supports the California Amendment to AASHTO LRFD design specifications.
- Applicable Design Modules : Steel Design, RC Design, PSC Design, Steel Composite Design
- Users can now perform code checks and design in full compliance with California Department of Transportation (Caltrans) standards, ensuring regional accuracy and approval readiness.

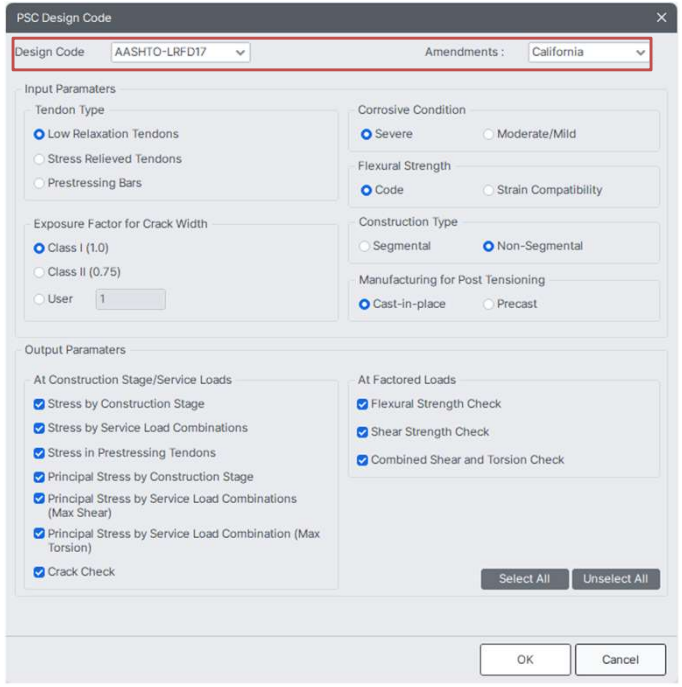
- ***Design > Steel Design > AASHTO-LRFD17 > California Amendments***
- ***Design > RC Design > AASHTO-LRFD17 > California Amendments***
- ***Design > PSC Design > AASHTO-LRFD17 > California Amendments***
- ***Design > Composite Design > AASHTO-LRFD17 > California Amendments***



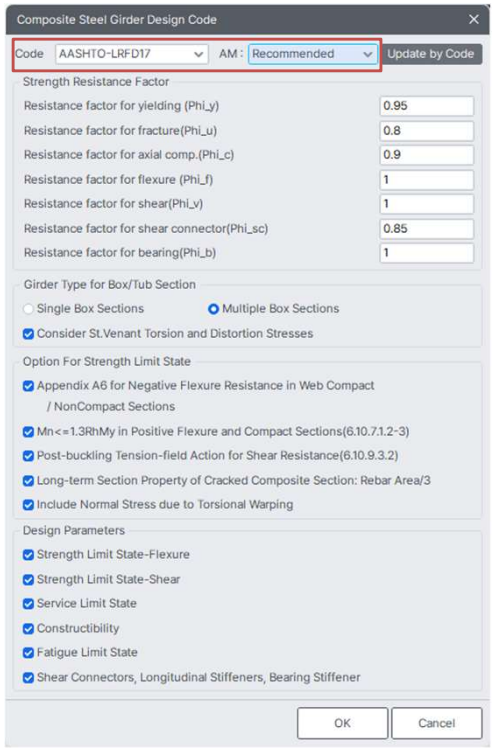
RC Design – CA Amendment



Steel Design – CA Amendment



PSC Design – CA Amendment



Steel Composite Design – CA Amendment

9. Auto-generate Load combination (RC) as per TMH07 : 1981

- Load combination are generated as per Table 17 of TMH07 : 1981
- For automatically generated load combinations, the SLS combinations are classified according to TMH07-1981 for serviceability checks under PSC Design.

▪ ***Results > Load Combination > Concrete Design > Auto Generation > TMH07: 1981***

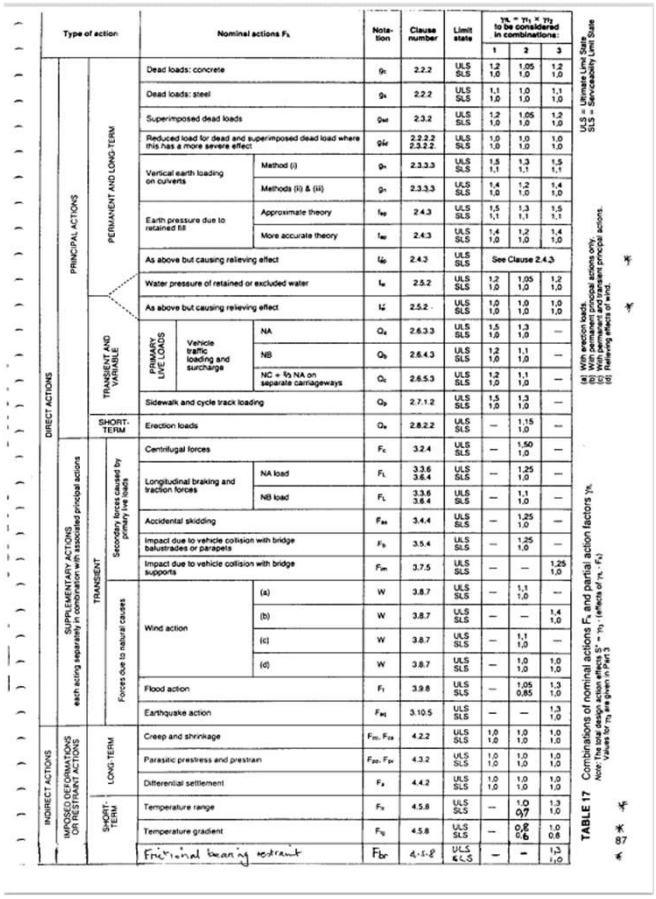
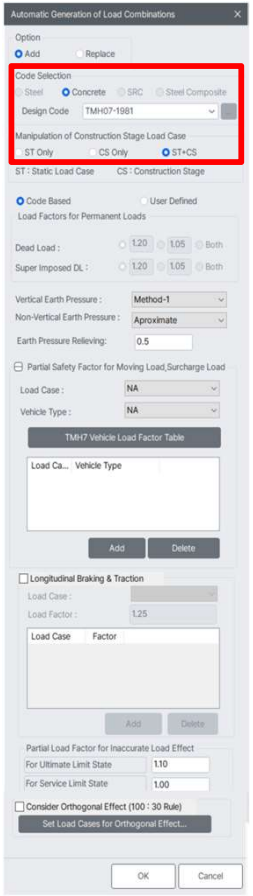
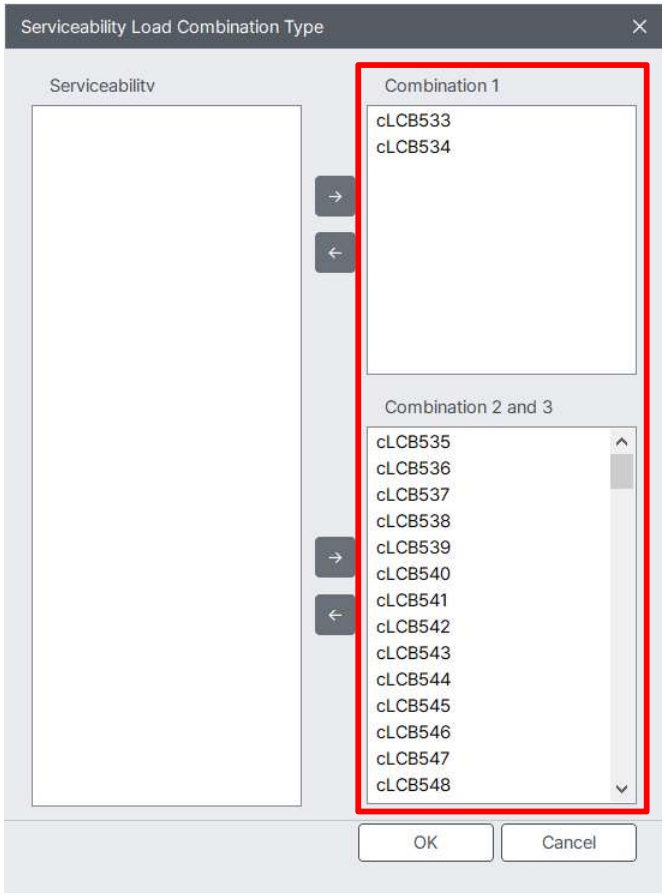


TABLE 17 Combinations of nominal actions F_k and partial action factors γ_k.





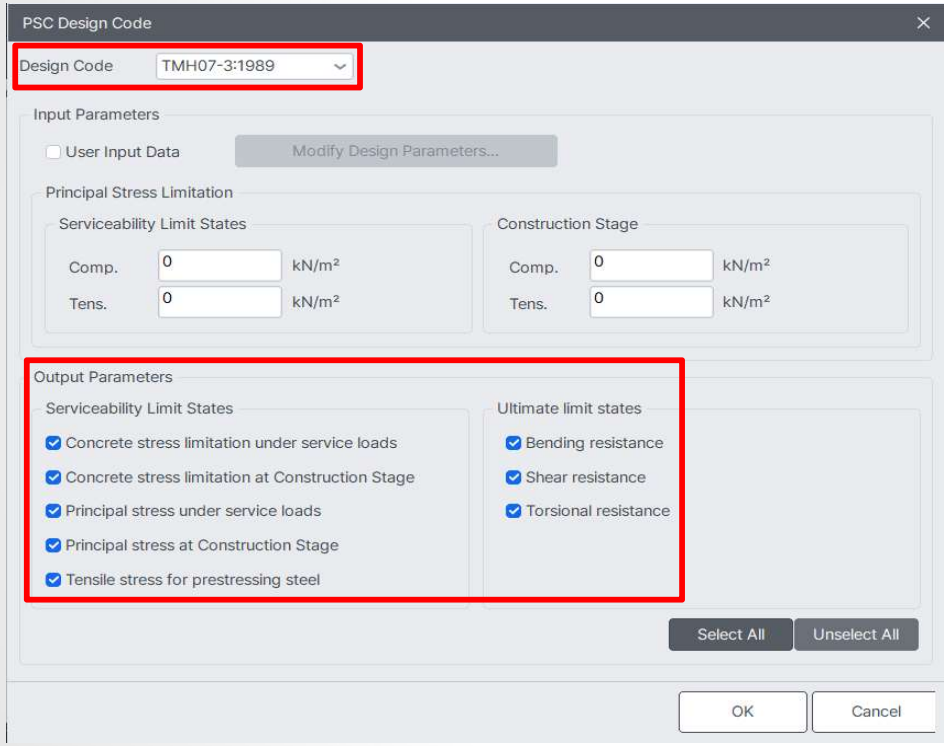
Auto Load Combination

SLS Load combination Type

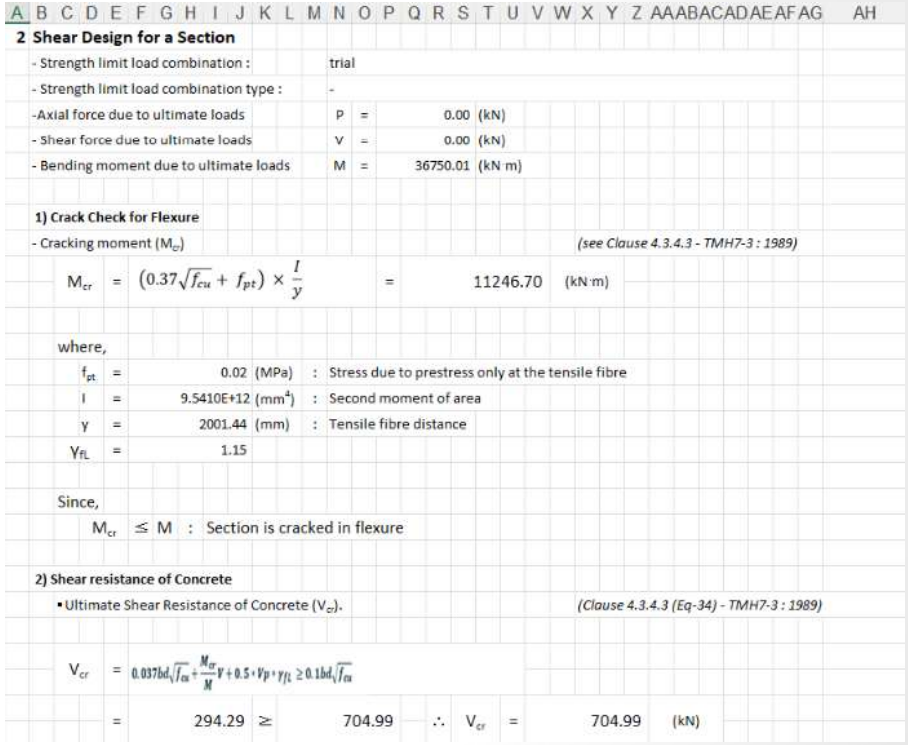
10. PSC Design as per TMH07-3 : 1989

- The design of PSC elements as per TMH07-3:1989 has been newly implemented in MIDAS.
- This feature can be applied to all the PSC girder.

▪ ***Design > PSC Design > TMH07-3 : 1989***



PSC Design



2 Shear Design for a Section

- Strength limit load combination :		trial	
- Strength limit load combination type :		-	
-Axial force due to ultimate loads	P =	0.00	(kN)
- Shear force due to ultimate loads	V =	0.00	(kN)
- Bending moment due to ultimate loads	M =	36750.01	(kN·m)

1) Crack Check for Flexure

- Cracking moment (M_{cr}) *(see Clause 4.3.4.3 - TMH7-3 : 1989)*

$$M_{cr} = \left(0.37\sqrt{f_{cu}} + f_{pt}\right) \times \frac{I}{y} = 11246.70 \ (kN \cdot m)$$

where,

f_{pt} =	0.02 (MPa)	:	Stress due to prestress only at the tensile fibre
I =	9.5410E+12 (mm^4)	:	Second moment of area
y =	2001.44 (mm)	:	Tensile fibre distance
γ_{fL} =	1.15		

Since,

$M_{cr} \leq M$: Section is cracked in flexure

2) Shear resistance of Concrete

- Ultimate Shear Resistance of Concrete (V_{cr}). *(Clause 4.3.4.3 (Eq-34) - TMH7-3 : 1989)*

$$V_{cr} = 0.037bd\sqrt{f_{cu}} + \frac{M_{cr}}{M}V + 0.5 \cdot V_p \cdot \gamma_{fL} \geq 0.1bd\sqrt{f_{cu}}$$

$$= 294.29 \geq 704.99 \quad \therefore V_{cr} = 704.99 \ (kN)$$

Detailed Excel Report

11. Significantly Improved Excel Design Report Generation Speed

- The generation speed of Excel-based design reports has been dramatically improved by adopting the LibXL library. This enhancement reduces the time required to export large and complex design calculation sheets.
- **Key Improvements** : Significantly faster export performance for design reports.
  Improved stability when generating large files.
- This update enhances user productivity, especially for projects requiring frequent report generation and documentation submission.

▪ ***Design > Steel Design ,RC Design , PSC Design , Composite Design***

- **Applicable to the following design codes:**

PSC/PSC Composite

AASHTO-LRFD20
AS 5100.5:17
BS 5400-4:1990
CSA-S6-14
CSA-S6-19
CSA-S6S1-10
KSCE-LSD15
KDS 24 14 21 : 2021
TMH07
Eurocode2-2:05
IRC112, IRS
BD44/15 for CS455, CS457
SNiP 2.05.03-84*
SP 35.13330.2011

Steel Composite

AASHTO-LRFD20
CSA-S6-14
CSA-S6-19
SNiP 2.05.03-84*
SP 35.13330.2011
EN 1994-2
KSCE-LSD15
KDS 24 14 31 : 2018

Steel SOD

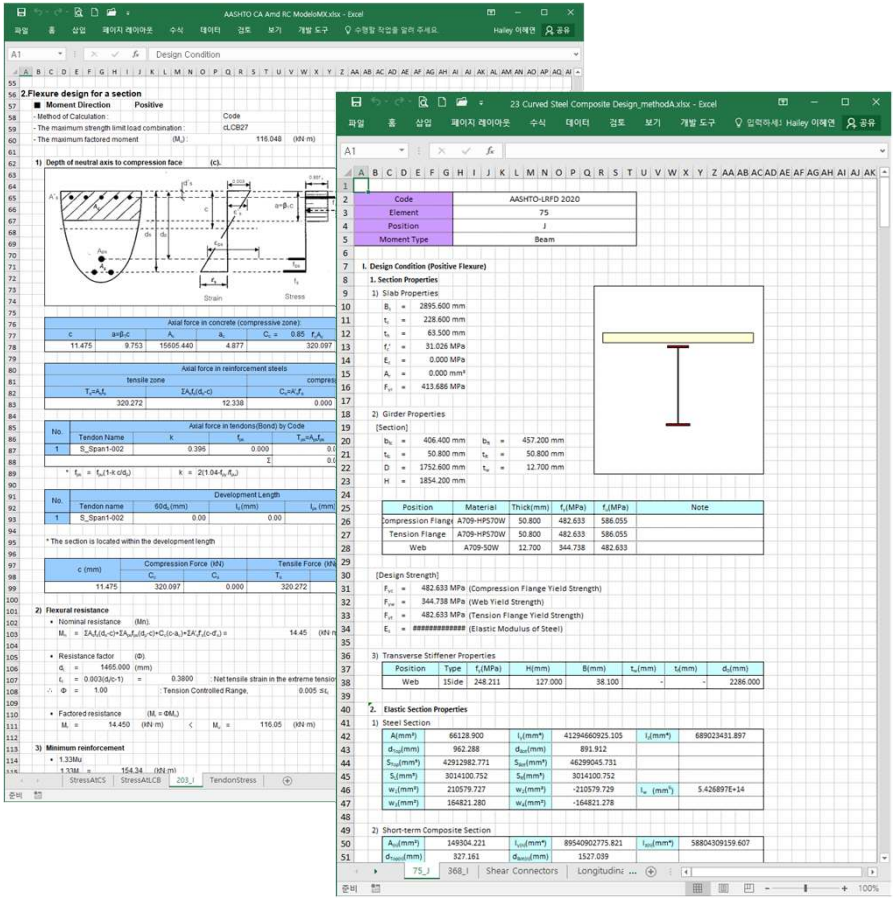
SNiP 2.05.03-84*
SP 35.13330.2011

Steel Rating

AASHTO-LRFR11
AASHTO-LRFR19
CS454/20
NR GN CIV 025

PSC Rating

AASHTO-LRFR11
AASHTO-LRFR19
CS454/20
KSCE-LSD15

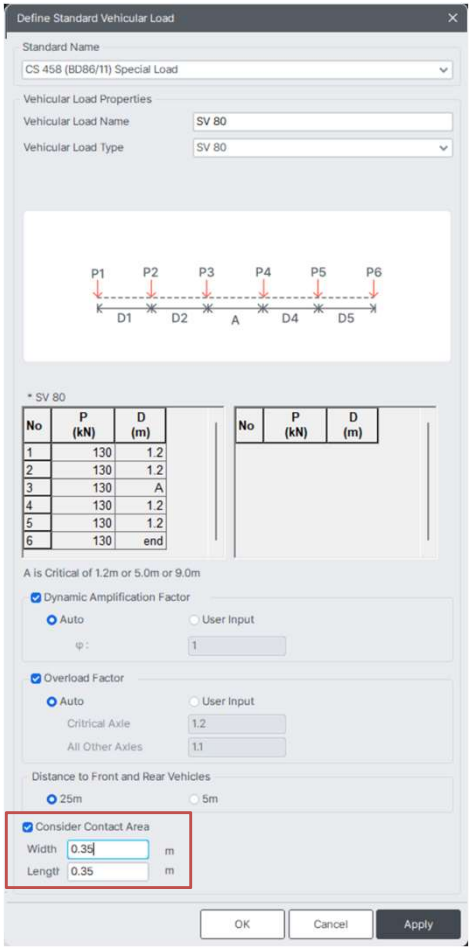


Excel Report

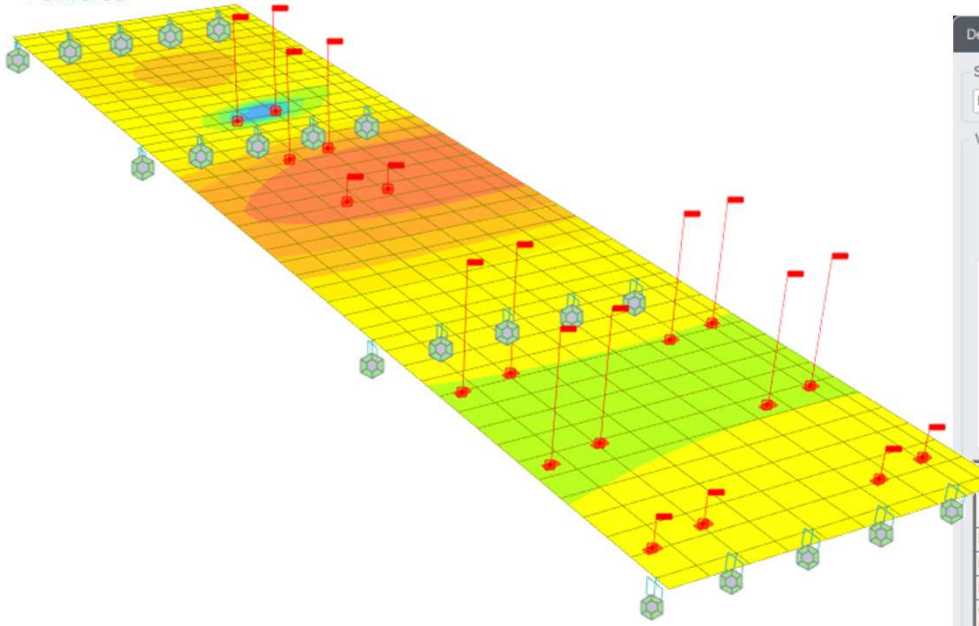
12. Moving patch load analysis as per Eurocode, BS & NZ traffic loads

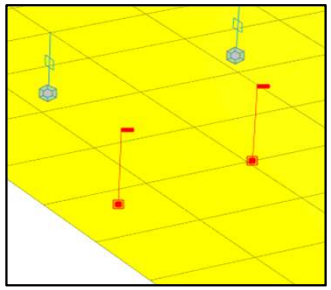
- The tire contact area of a wheel can now be applied during moving load analysis not only for AASHTO LRFD vehicles (as in previous versions), but also for all road bridge vehicles defined in Eurocode, BS and New Zealand standards.
- By applying patch (area) loads instead of concentrated wheel loads, the resulting design forces on plate elements can be significantly reduced, leading to more realistic and optimized analysis results. This enhancement improves modeling accuracy, especially for deck and slab structures where local stress distribution is critical.

▪ ***Load > Moving Load (AASHTO LRFD) > Vehicles***

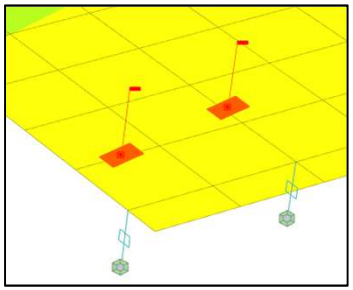


BS Special Vehicle

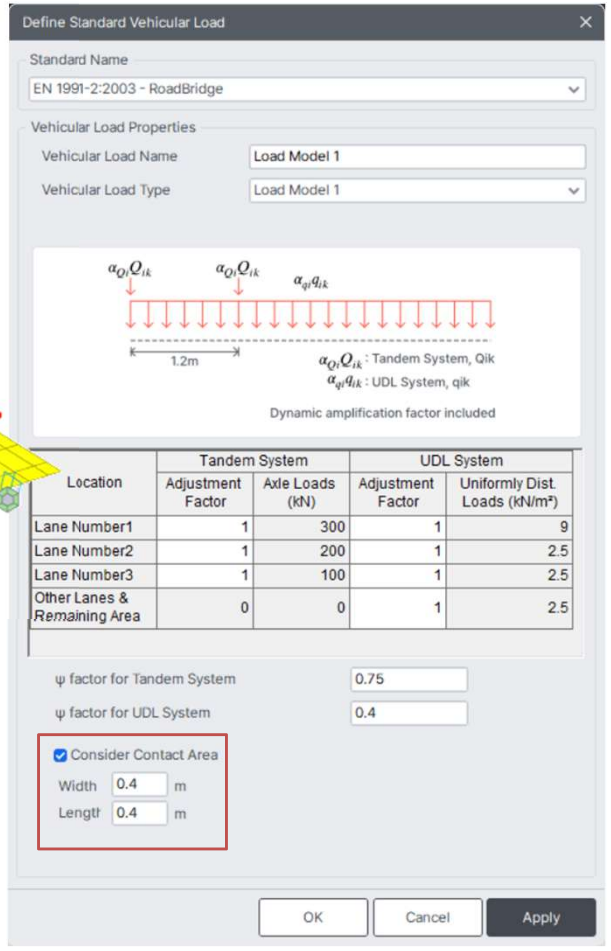




Concentrated wheel loads



Patch/area wheel loads

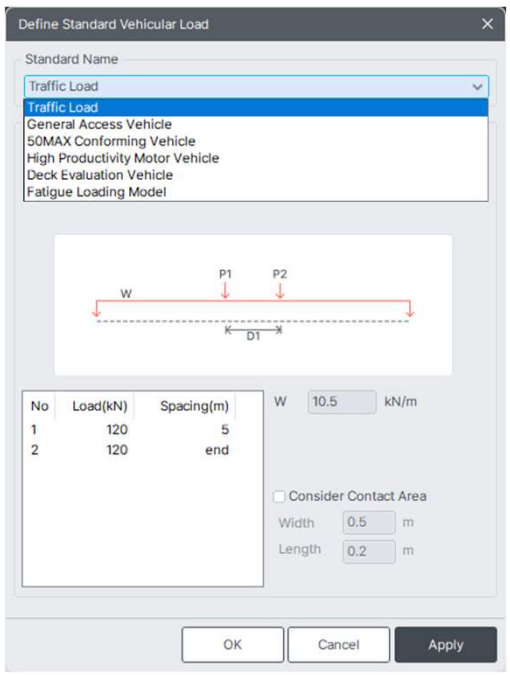


Eurocode Load Model1 Vehicle

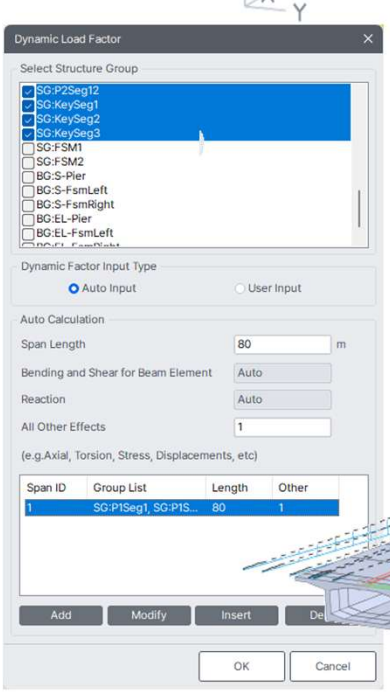
13. Addition of evaluation truck loads for existing bridges in New Zealand(Based on SP/M/022 v3.4)

- A full set of New Zealand vehicle load models, as specified in SP/M/022 v3.4, has been added, including: HN (normal) loading, HO (overload) loading, TT530 (Fatigue), HPMV evaluation loading, General access and 50MAX reference vehicles
- This enhancement is integrated with the lane optimization feature and the patch load (tire contact area) function for improved load distribution on deck elements.
- Users can define the target element and span length, and the Dynamic Factor is automatically calculated and applied in the analysis, ensuring more accurate simulation of vehicle effects on bridge structures.

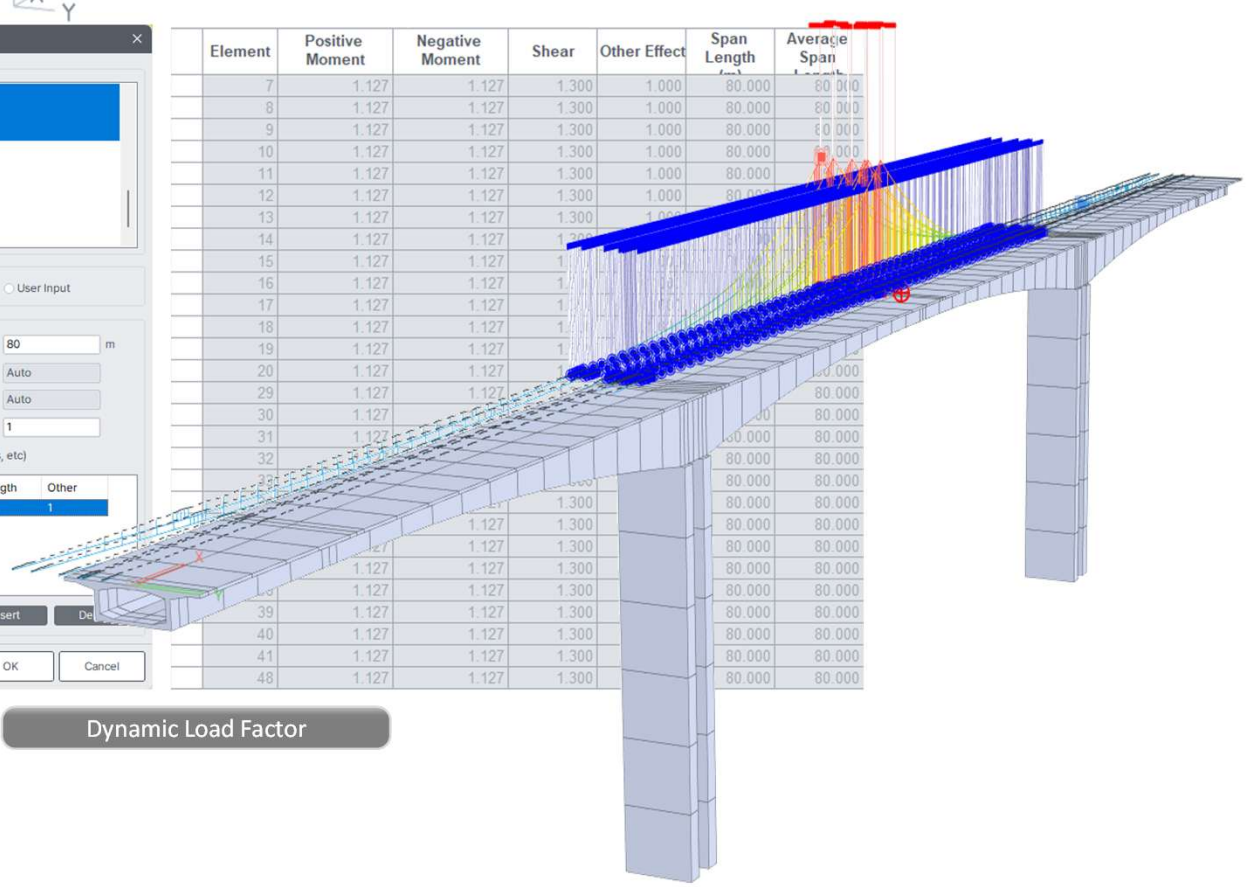
▪ ***Load > Moving Load > New Zealand***



New Zealand Vehicles



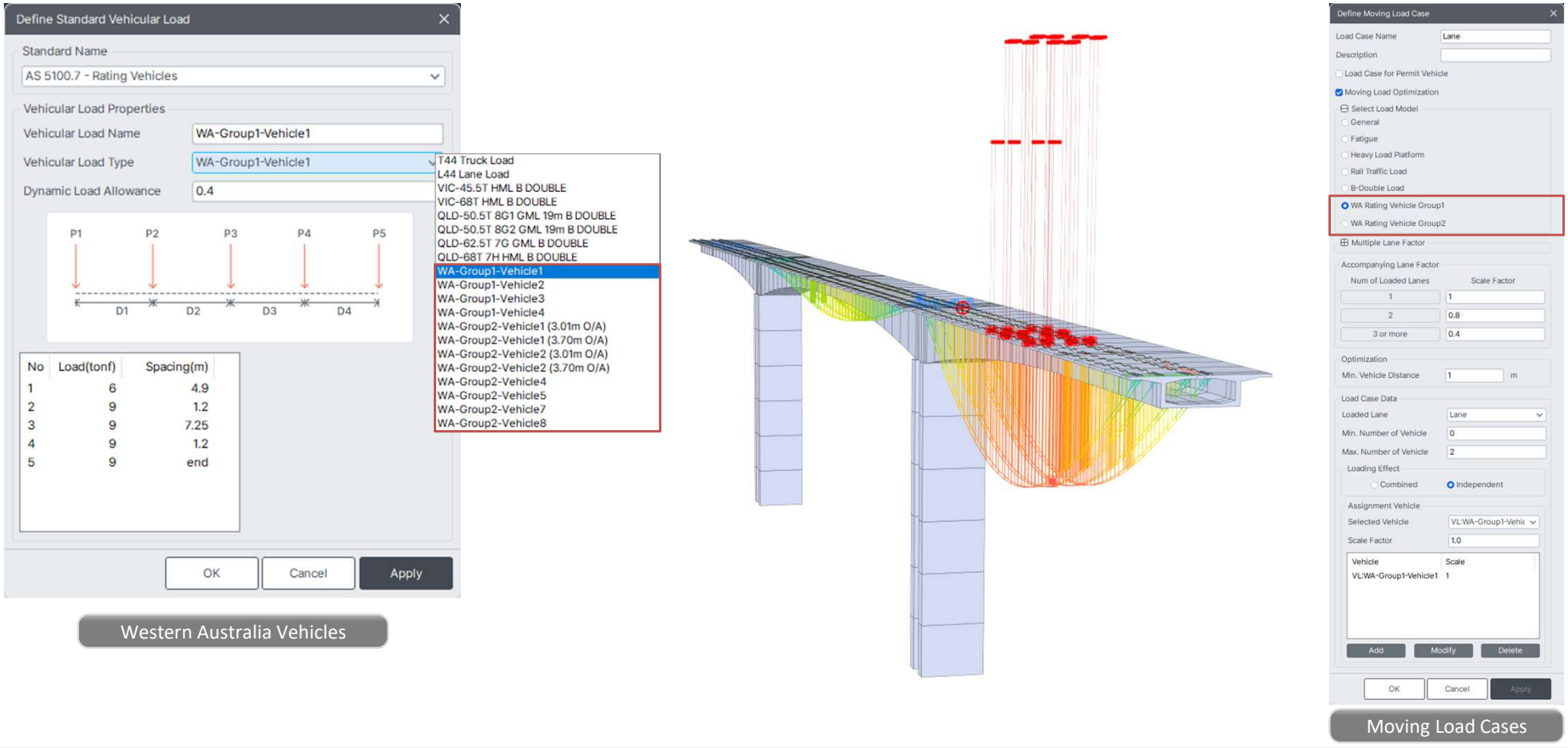
Dynamic Load Factor



14. Addition of special permit trucks for load rating of existing bridges in Western Australia

- The latest version of MIDAS Civil includes a newly added vehicle database for Western Australia (WA) to support region-specific bridge assessments.
- Group 1 and Group 2 vehicles can be selected while optionally enabling Multiple Lane Factors and Accompanying Lane Factors. Group2 vehicles are fully compatible with SM1600 vehicle configurations.
- This enhancement provides improved flexibility and regulatory compliance for bridge evaluations in Western Australia.

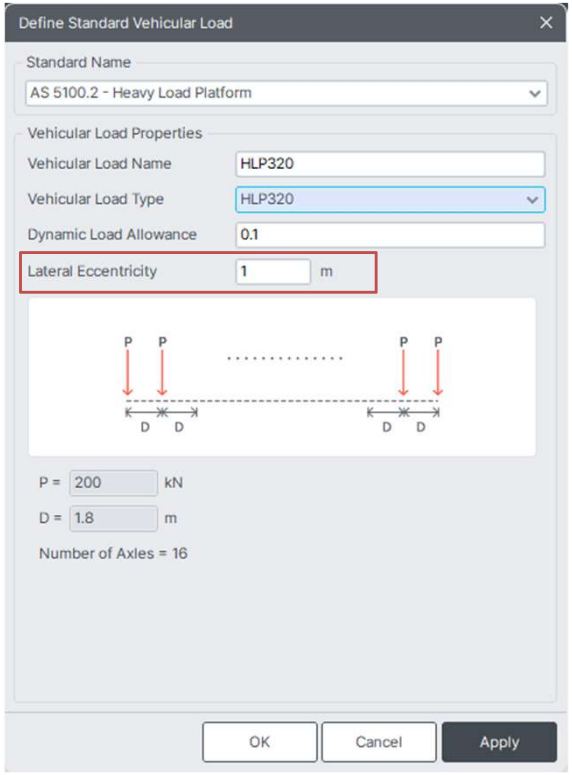
▪ ***Load > Moving Load > Australia***



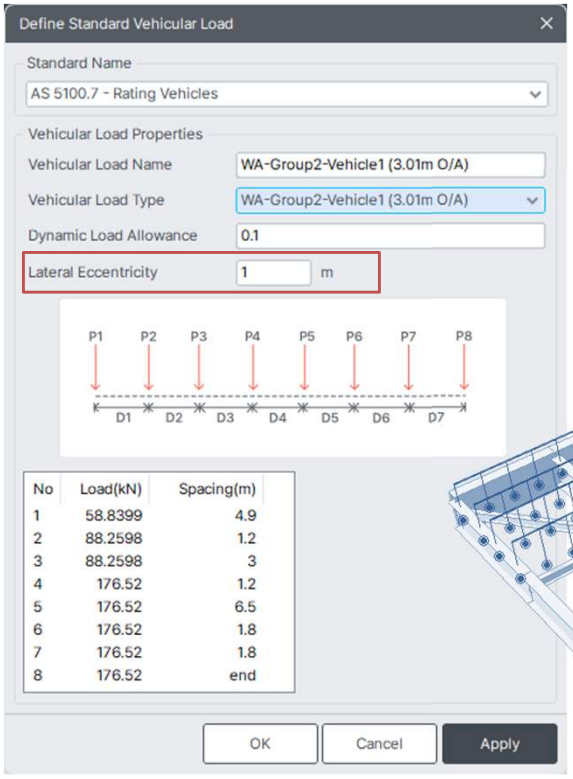
15. Enhancement of Australian moving load options: Add lateral offset distance option

- When performing moving load analysis for Heavy Load Platform (HLP) vehicles under AS 5100.2 or WA Group 2 vehicles under AS 5100.7, it is important to evaluate the critical vehicle position considering lateral eccentricity. In previous versions, lateral eccentricity was fixed at 1.0 m during vehicle placement. With this update, users can now manually define lateral eccentricity up to 1.0 m, allowing for more accurate and flexible simulation of critical load positions.
- **Benefits** : Improves accuracy in rating calculations by reflecting realistic vehicle positioning.
  Enables detailed control of vehicle eccentricity in accordance with project-specific requirements.
  Enhances compliance with AS 5100.2 and AS 5100.7 practices.
- This feature provides more robust control for heavy vehicle evaluation, especially in rating scenarios involving wide bridges or straddling lanes.

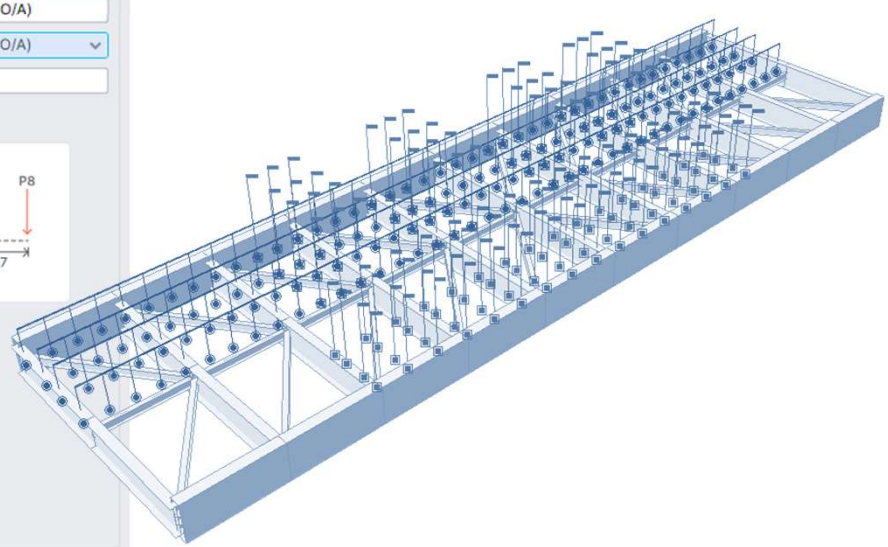
▪ ***Load > Moving Load > Australia***



Heavy Load Platform



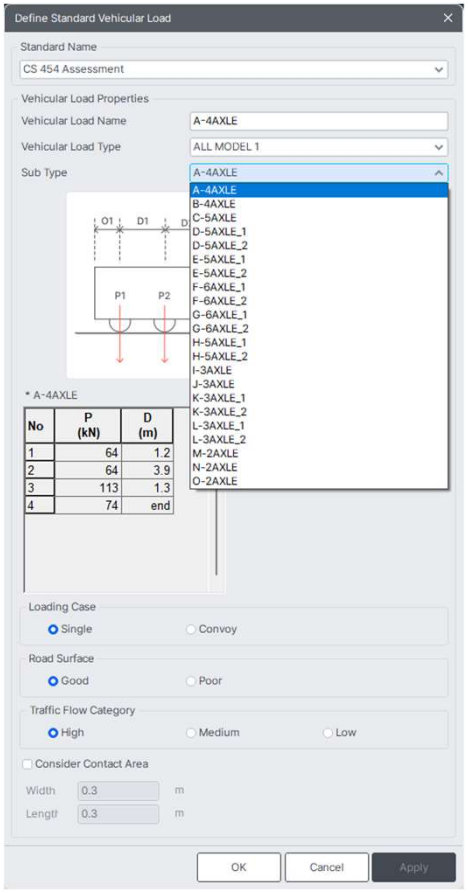
WA Rating Vehicles

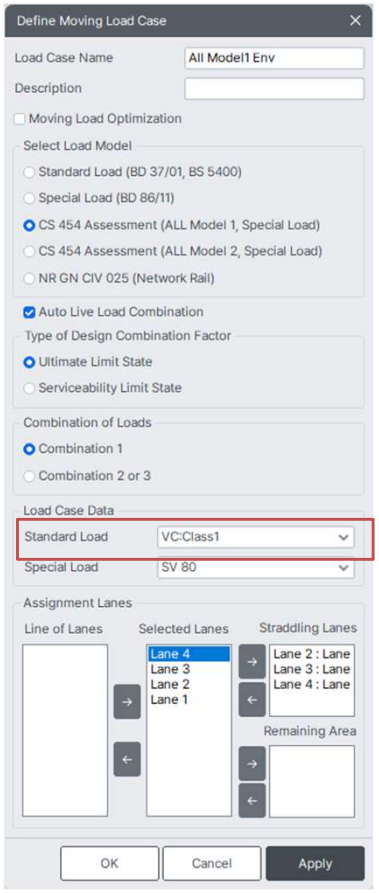


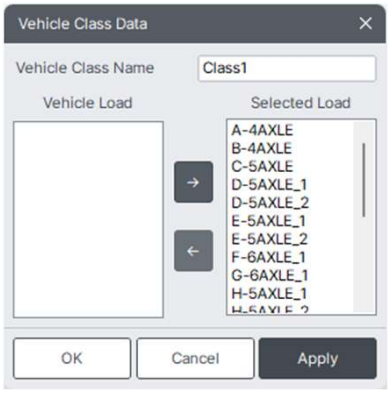
16. Enhancement of Load All Model 1 in the UK rating system to support envelope type loads

- The UK rating system has been enhanced to support Vehicle Class functionality for BS moving loads, including All Model 1 as per CS454.
- Previously, reviewing All Model 1 required checking results for over 20 different vehicles individually, which was time-consuming. With the new Vehicle Class feature, users can now define a single moving load case that automatically evaluates all vehicles in the class and returns results for the most critical vehicle.
- This significantly improves efficiency by: Reducing setup and post-processing time, Automatically identifying governing cases, Enabling envelope-type load evaluations in a single step. This update streamlines the BS-based assessment process and enhances productivity, especially for complex rating projects.

▪ ***Load > Moving Load > Australia***





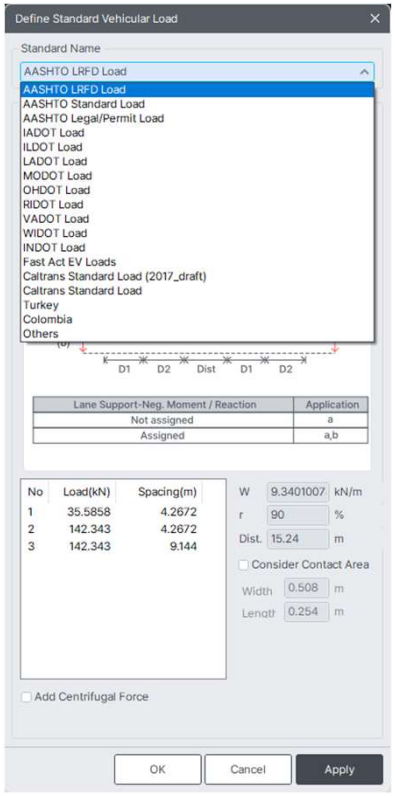


All Model1 Vehicles | Moving Load Case | Vehicle Class

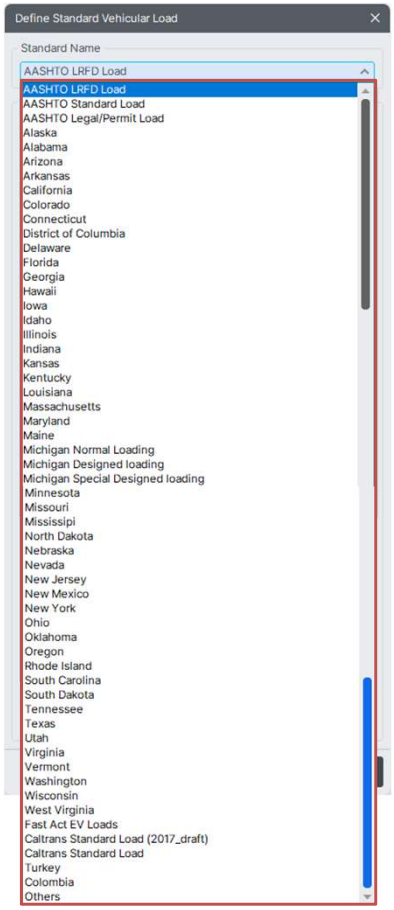
17. Addition of vehicle database for 46 US states

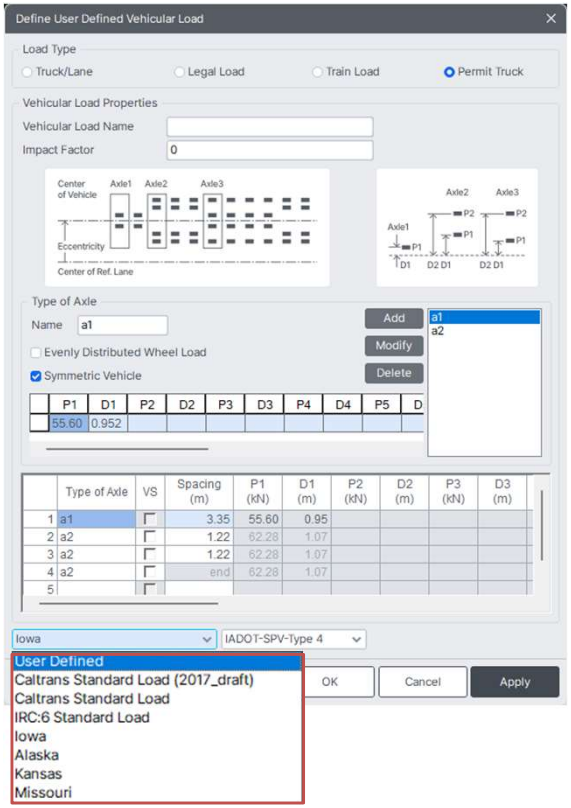
- In previous versions, MIDAS Civil provided AASHTO LRFD vehicle databases for only 10 states, including California. With this update, the database has been expanded to cover all 46 U.S. states that follow the AASHTO LRFD specification.
- Key Additions: State-specific Design Trucks, Legal Trucks, and Permit Trucks are now included for each state.
- This enhancement allows users to perform more accurate and regionally compliant bridge load rating and design across a wide range of jurisdictions in the United States.

▪ ***Load > Moving Load > Australia***



CIVIL NX 2025 (v1.1)





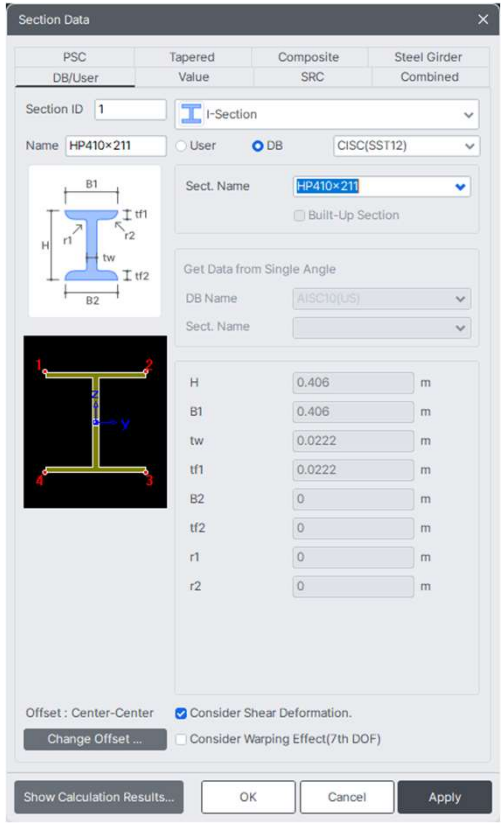
CIVIL NX 2025 (v2.1)

Moving Load Cases

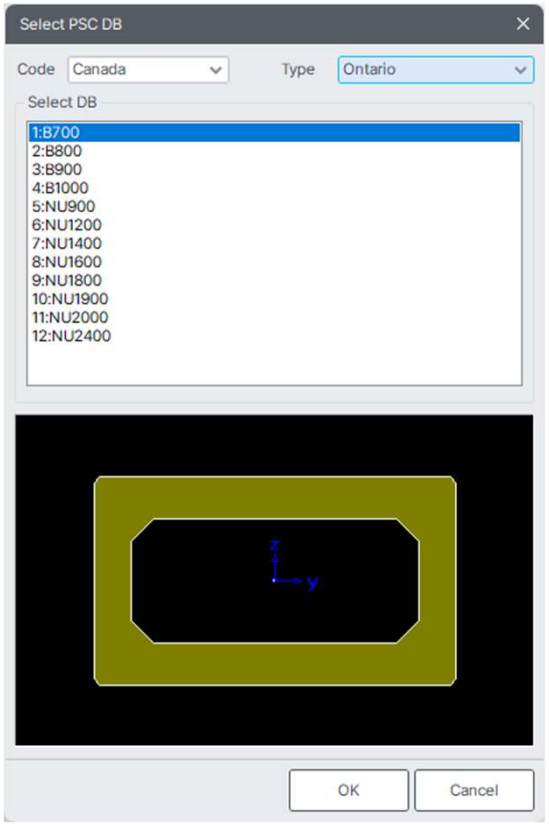
18. Addition of cross-section databases for the US and Canada

- The section database has been significantly expanded to support regional standards in the U.S. and Canada, enhancing modeling accuracy and design efficiency. These additions provide engineers with ready-to-use section profiles that comply with local specifications, streamlining design workflows for North American bridge projects.
- Canada : Added steel section database according to CISC-ICCA 2022, including : Angle, Channel, I-section, T-section, Box, Pipe, and Double Angle profiles. Added 12 PSC sections used in Ontario, including : PSC I-girders and PSC Box-girders.
- United States – Florida : Added 41 prestressed concrete (PSC) sections based on Florida Department of Transportation (FDOT) standards, covering : PSC I-Girders, PSC U-Girders, Interior & Exterior Slab Beams, PSC Pile (Square Sections)

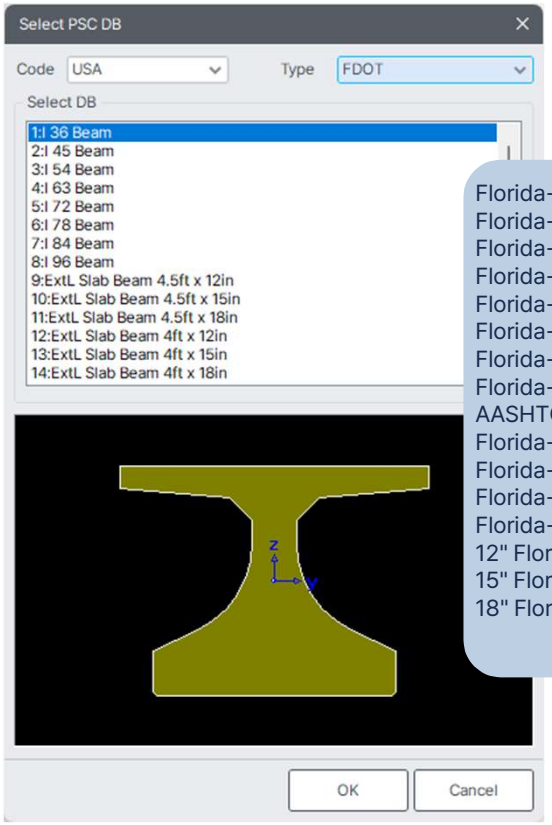
▪ ***Properties > Section Properties***



Canada CISC Steel DB sections



Canada Ontario PSC DB Sections



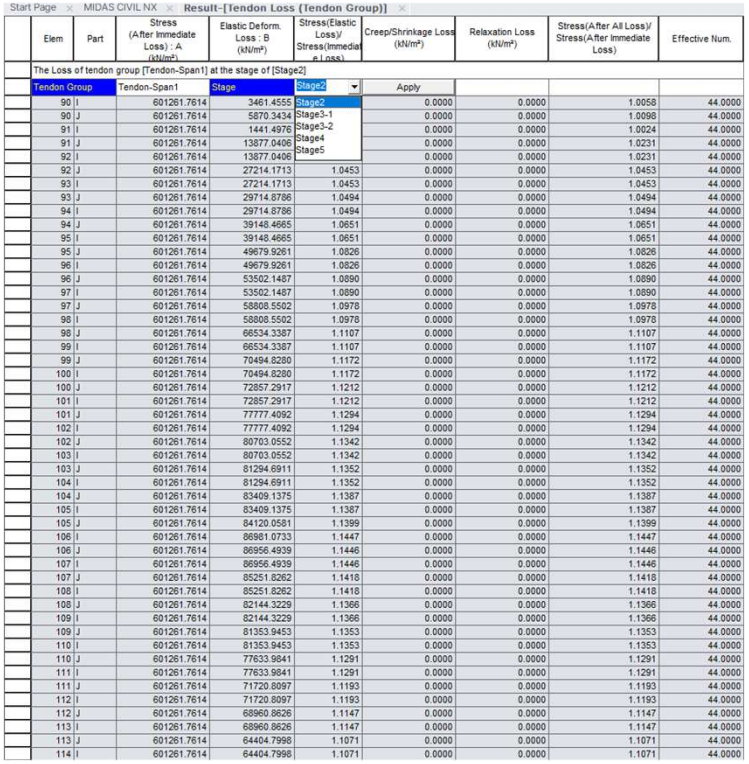
USA Florida PSC DB Sections

Florida-I 36 Beam - Standard Details
Florida-I 45 Beam - Standard Details
Florida-I 54 Beam - Standard Details
Florida-I 63 Beam - Standard Details
Florida-I 72 Beam - Standard Details
Florida-I 78 Beam - Standard Details
Florida-I 84 Beam - Standard Details
Florida-I 96 Beam - Standard Details
AASHTO Type II Beam
Florida-U 48 Beam - Standard Details
Florida-U 54 Beam - Standard Details
Florida-U 63 Beam - Standard Details
Florida-U 72 Beam - Standard Details
12" Florida Slab Beam
15" Florida Slab Beam
18" Florida Slab Beam

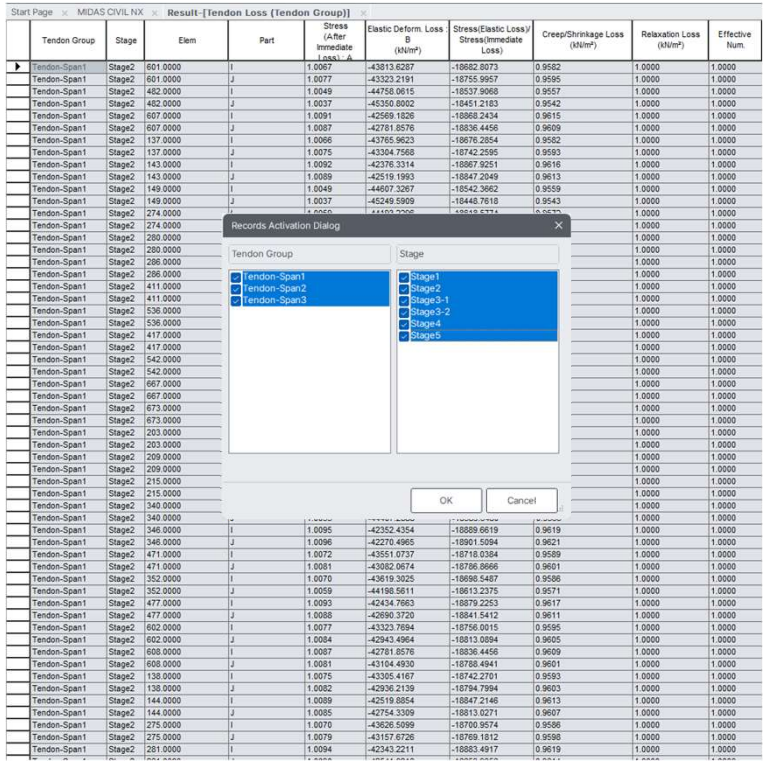
19. Batch output for tendon loss table by construction stage and tendon group

- In previous versions, users could view tendon loss results for only one tendon group and one construction stage at a time.
- With this update, the result table now supports multi-selection of both tendon groups and construction stages, allowing users to review multiple results simultaneously.
- **Benefits** : Streamlines the process of reviewing and comparing tendon losses across various groups and stages.
  Significantly improves efficiency when generating reports or summarizing results, eliminating the need to check tendon data one by one.
  Results for all selected items are displayed together in a single integrated table.

▪ ***Results > Result Tables > Tendon > Tendon Loss***



CIVIL NX 2025 (v1.1)



CIVIL NX 2025 (v2.1)