LOAD RATING TOOL

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Illinois Department of Transportation

AASHTOWare BrR
2019 RADBUG

OVERVIEW

- What is it?
- IDOT's Current Overweight Permit Process
- Load Rating Tool
  - How to set it up
  - How to use it

LOAD RATING TOOL

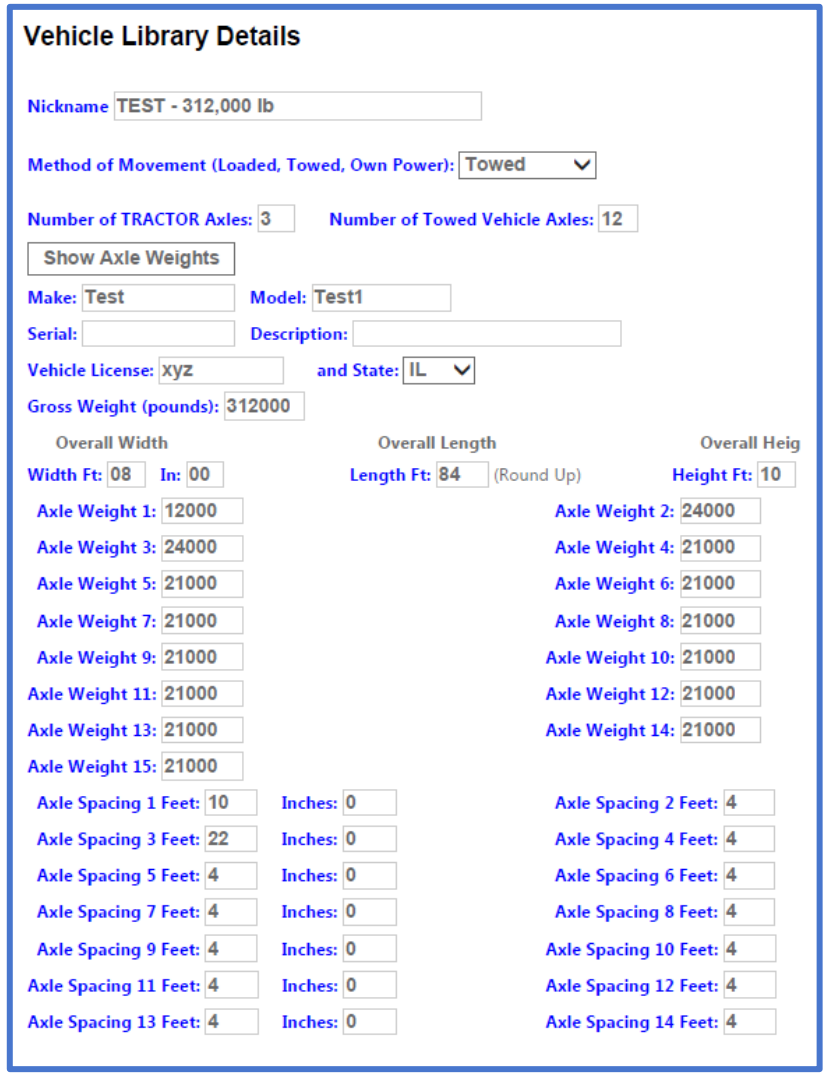
- What is it?
- Special tool
  - load rate multiple bridges quickly
  - BrR interface
    - manage precomputed data
    - analyze permit loads
  - third party truck routing software

ILLINOIS OVERWEIGHT PERMIT SYSTEM

- Illinois issued over 50,000 overweight permits last year (> 120,000lbs)
- Illinois Transportation Automated Permit system (ITAP)
  - Trucking Company fills out form on-line
  - ITAP identifies bridges, then sends them for analysis
  - ITAP issues permit to Trucking Company
- Completely Automated except:
  - Gross Vehicle Weights ≥ 300,000 lbs
  - Bridges that Fail Analysis
  - Bridges with No Models

ILLINOIS OVERWEIGHT PERMIT SYSTEM

- Example
  - Permit GVW = 312,000 lb



Vehicle Library Details

Nickname: TEST - 312,000 lb

Method of Movement (Loaded, Towed, Own Power): Towed

Number of TRACTOR Axles: 3 Number of Towed Vehicle Axles: 12

Show Axle Weights

Make: Test Model: Test1

Serial: Description:

Vehicle License: xyz and State: IL

Gross Weight (pounds): 312000

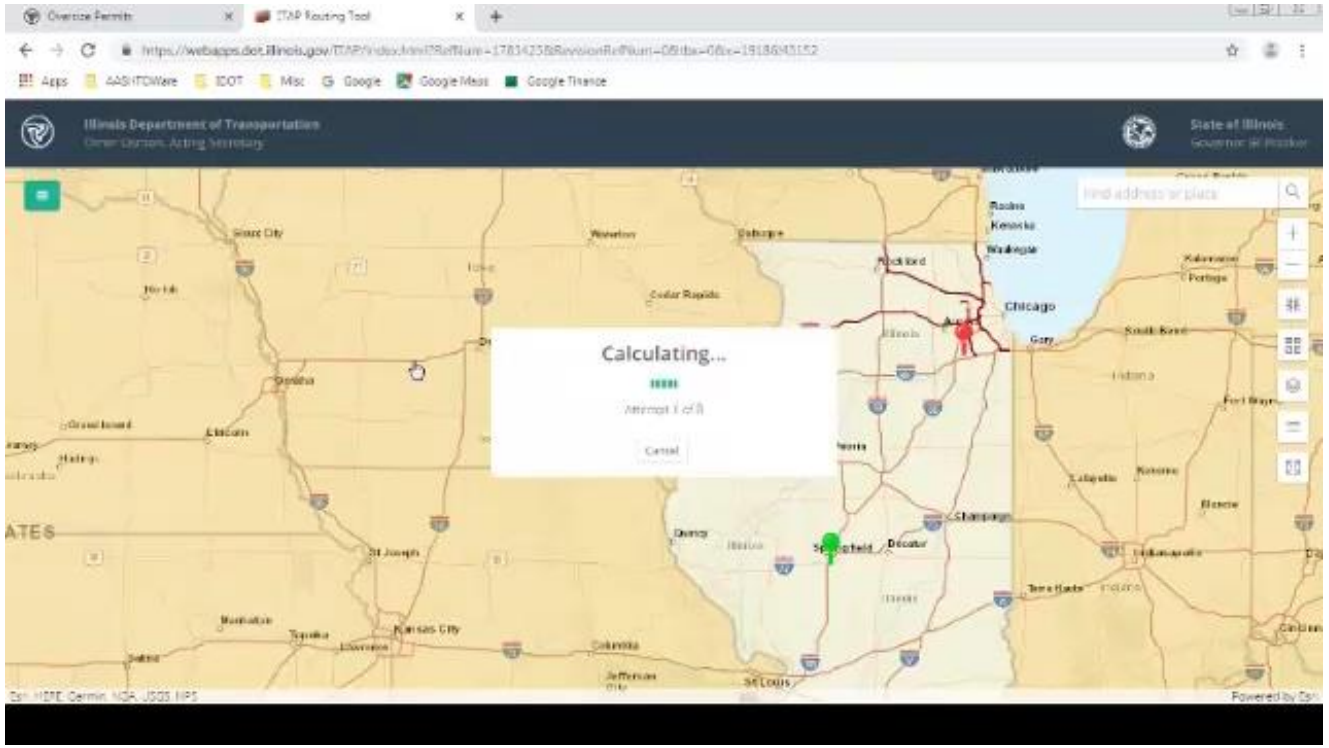
Overall Width		Overall Length		Overall Heig
Width Ft: 08	In: 00	Length Ft: 84 (Round Up)		Height Ft: 10

Axle Weight 1: 12000	Axle Weight 2: 24000
Axle Weight 3: 24000	Axle Weight 4: 21000
Axle Weight 5: 21000	Axle Weight 6: 21000
Axle Weight 7: 21000	Axle Weight 8: 21000
Axle Weight 9: 21000	Axle Weight 10: 21000
Axle Weight 11: 21000	Axle Weight 12: 21000
Axle Weight 13: 21000	Axle Weight 14: 21000
Axle Weight 15: 21000	

Axle Spacing 1 Feet: 10	Inches: 0	Axle Spacing 2 Feet: 4	
Axle Spacing 3 Feet: 22	Inches: 0	Axle Spacing 4 Feet: 4	
Axle Spacing 5 Feet: 4	Inches: 0	Axle Spacing 6 Feet: 4	
Axle Spacing 7 Feet: 4	Inches: 0	Axle Spacing 8 Feet: 4	
Axle Spacing 9 Feet: 4	Inches: 0	Axle Spacing 10 Feet: 4	
Axle Spacing 11 Feet: 4	Inches: 0	Axle Spacing 12 Feet: 4	
Axle Spacing 13 Feet: 4	Inches: 0	Axle Spacing 14 Feet: 4	

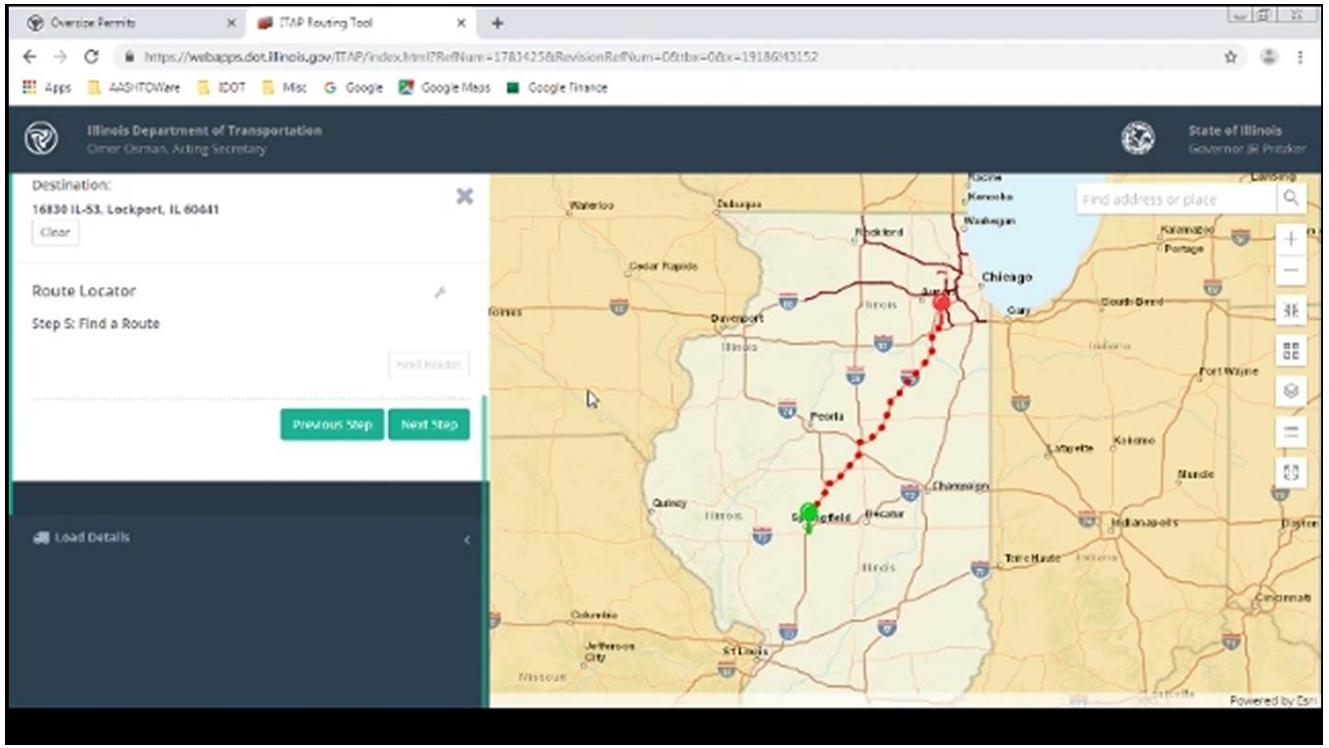
ILLINOIS OVERWEIGHT PERMIT SYSTEM

- Example
  - Permit GVW = 312,000 lb
  - Springfield to Joliet (170 miles)
    - trucker picks start & end point
    - ITAP
      - approx. 1 minute to create route
      - work zones
      - posted bridges
      - height/width restrictions



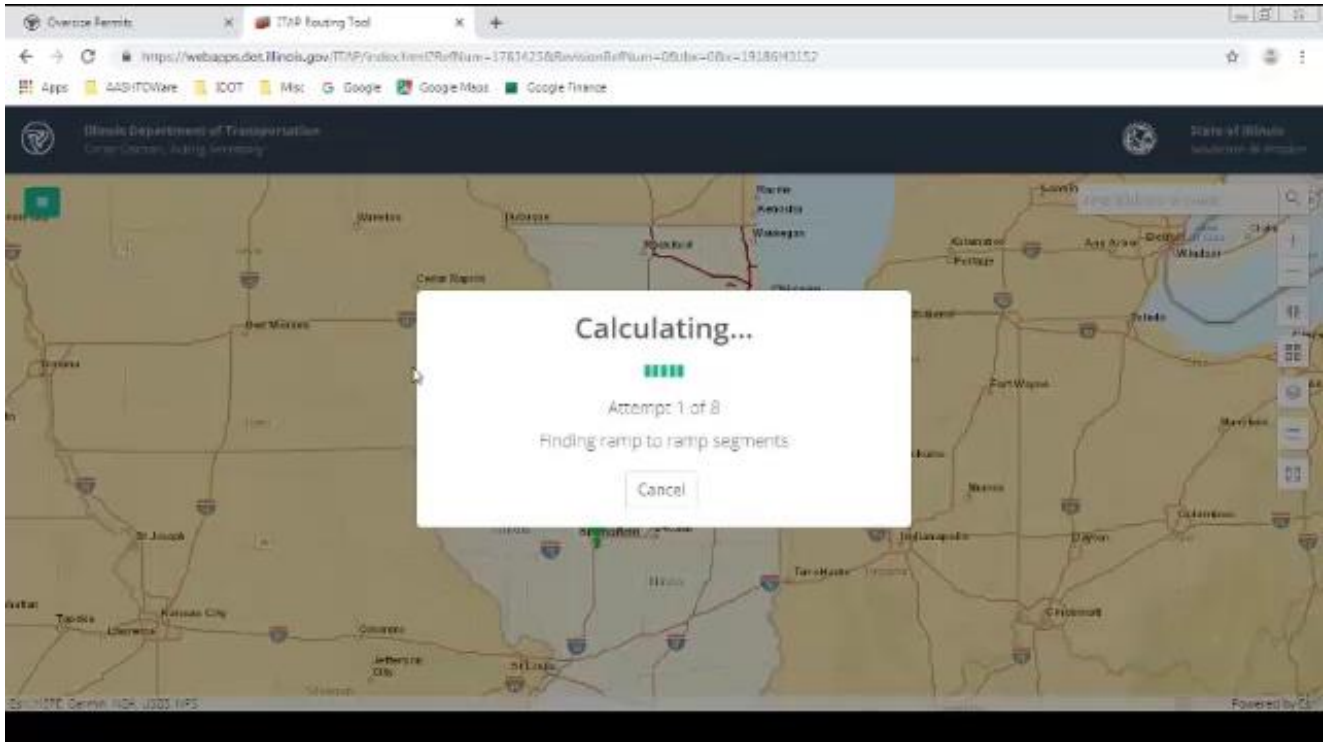
ILLINOIS OVERWEIGHT PERMIT SYSTEM

- Example
  - Permit GVW = 312,000 lb
  - Springfield to Joliet (170 miles)
    - trucker picks start & end point
    - ITAP
      - approx. 1 minute to create route
      - work zones
      - posted bridges
      - height/width restrictions
      - found 130 bridges to analyze

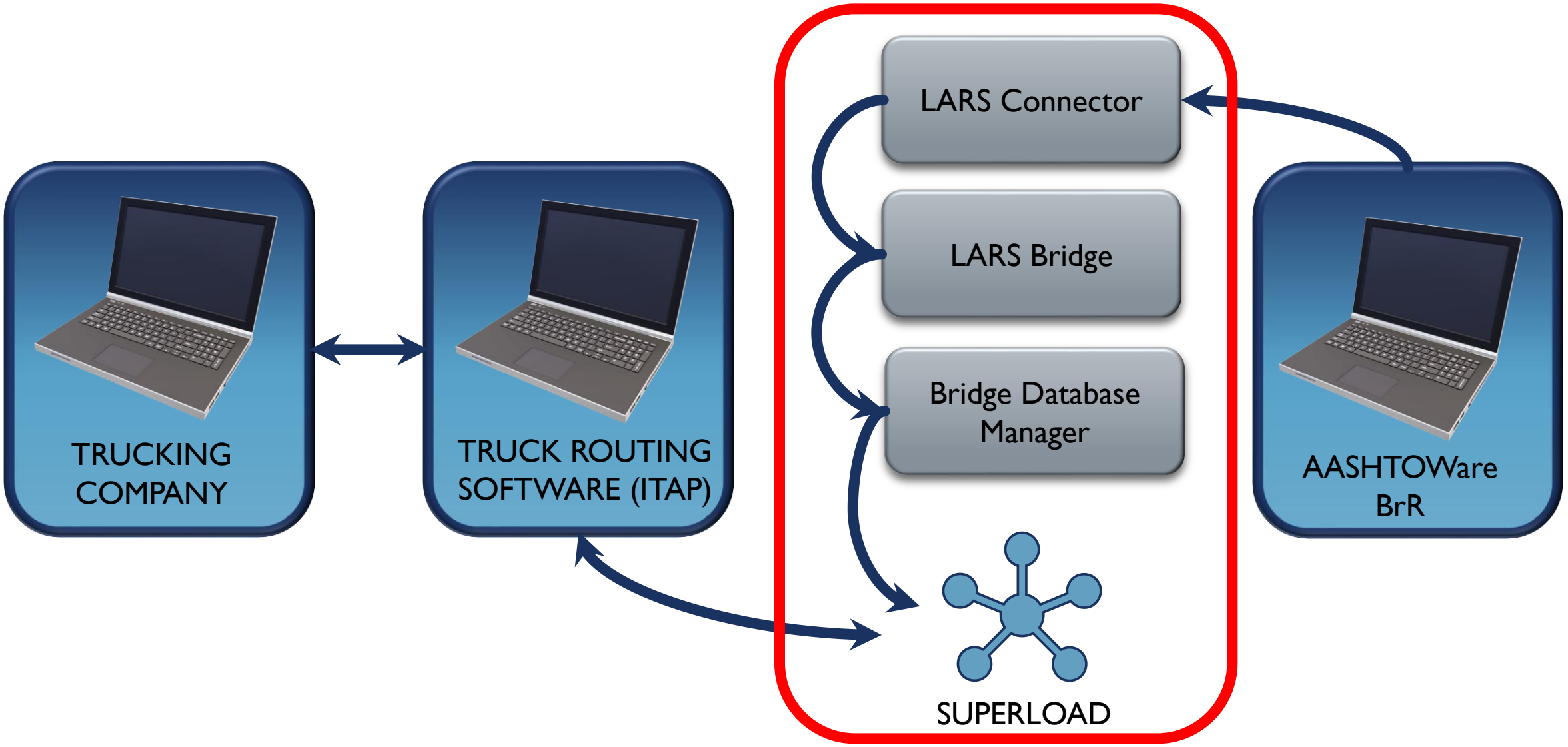


ILLINOIS OVERWEIGHT PERMIT SYSTEM

- Example
  - Permit GVW = 312,000 lb
  - Springfield to Joliet (170 miles)
  - 130 bridges
    - approx. 15 seconds to analyze
    - 106 Passed w/45 mph restriction
    - 8 Passed w/Crawl speed restriction
    - 16 Failed



BEHIND THE CURTAIN



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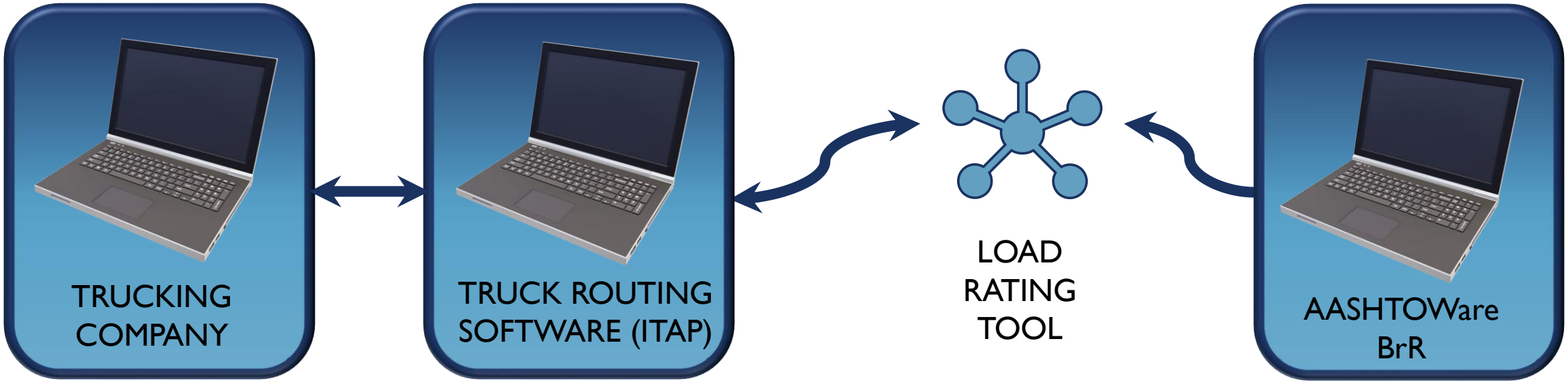
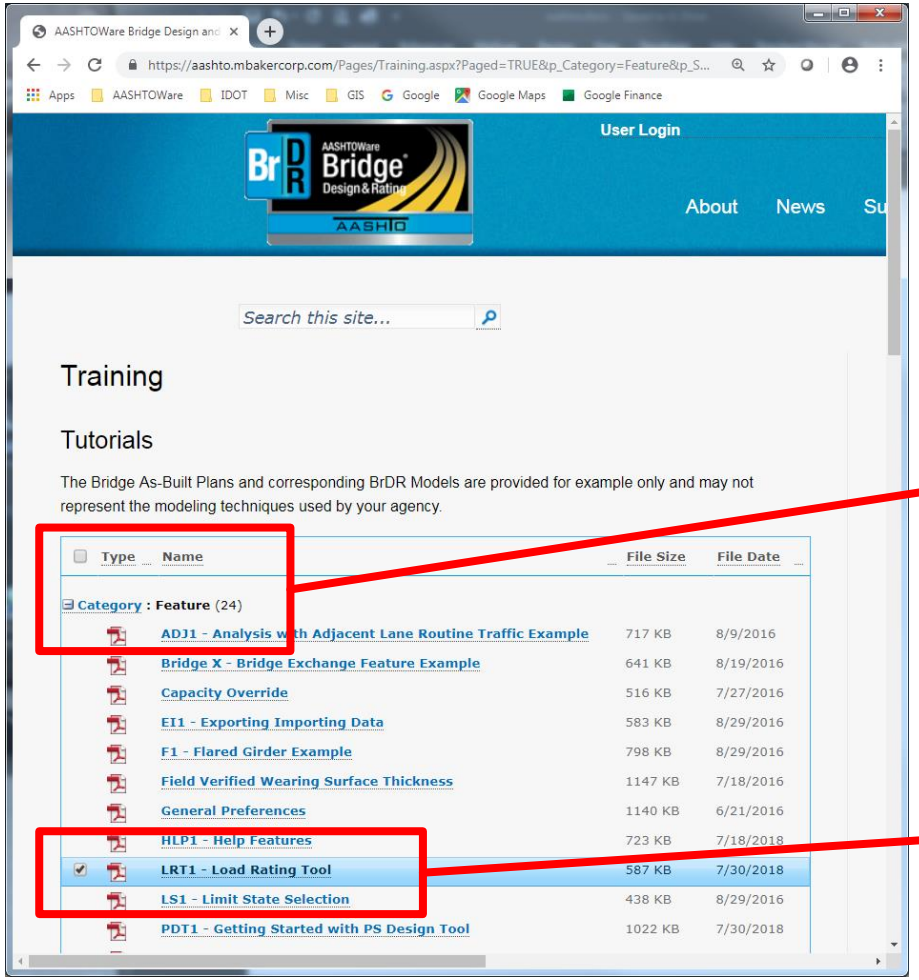
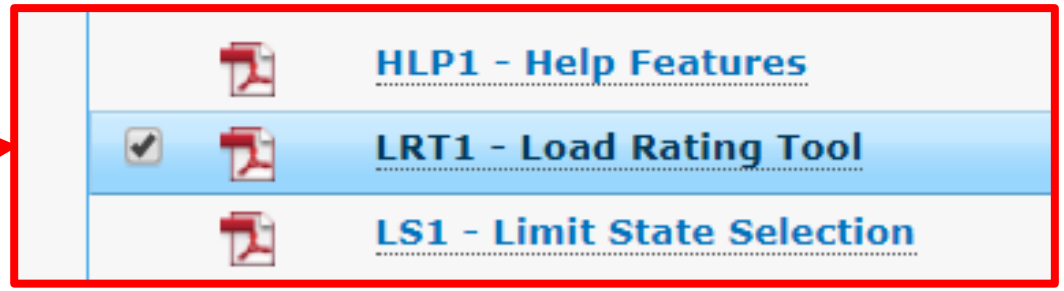


AASHTOWARE - WHERE TO START



- https://aashto.mbakercorp.com/Pages/Training.aspx



AASHTOWARE - WHERE TO START

- Concise & Easy to Follow (12 pages)
- Three Steps
  - Configuration
  - Generation of Precomputed Data
  - Permit Vehicle Analysis

LRT1 - Load Rating Tool

This example describes the use of the Load Rating Tool feature in BrR. *Note: At the time of this writing, the Load Rating Tool only supports high-speed ratings of multi-girder bridges which contain steel, reinforced concrete, and/or prestressed concrete members.*

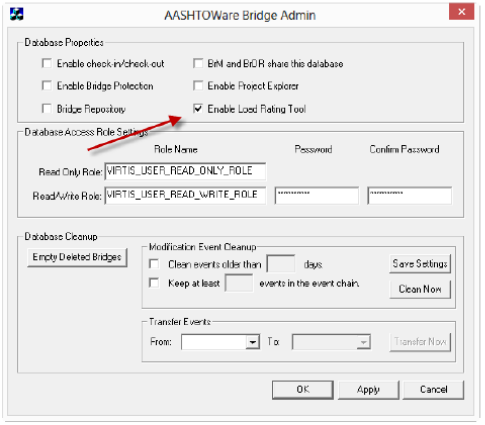
Topics covered:

- Configuration of the Load Rating Tool
- Generation and maintenance of precomputed data
- Operation of the Load Rating Tool

Configuration

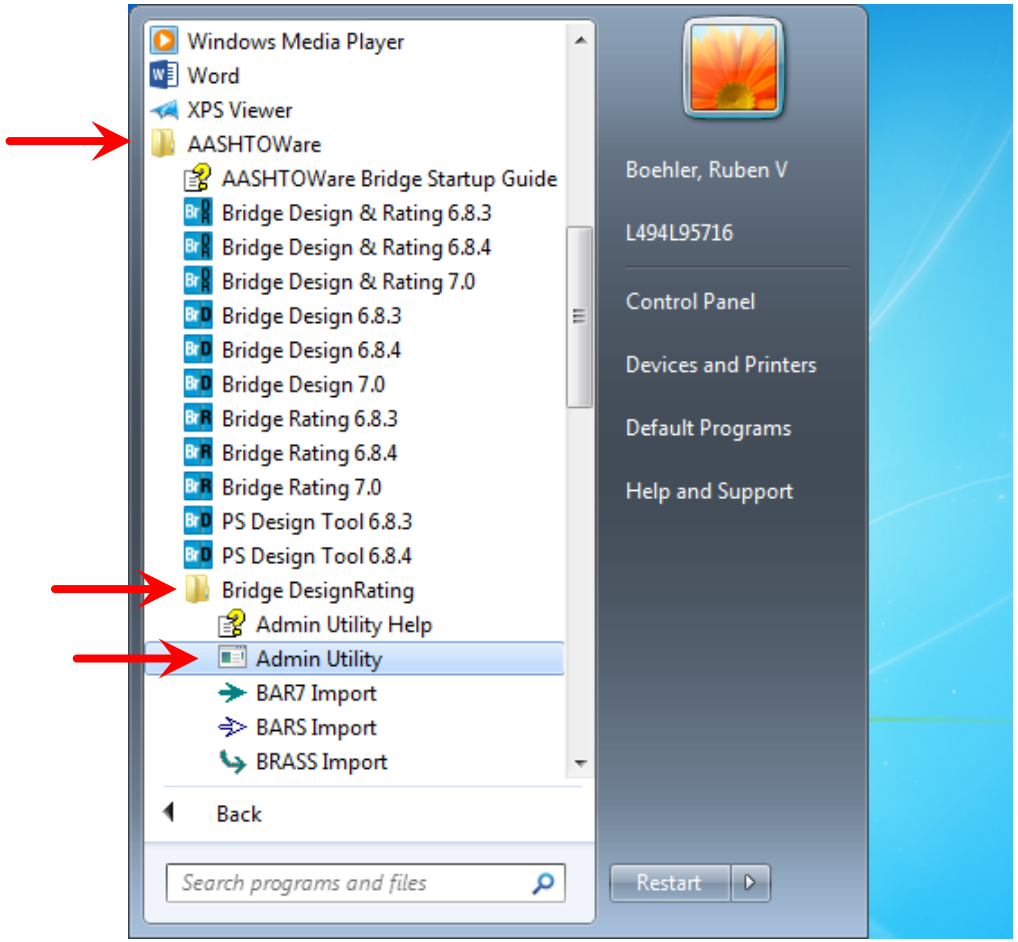
By default, the Load Rating Tool is disabled in the user interface. Before the Load Rating Tool can be used, it must be enabled through the AASHTOWare Bridge Admin Utility. *Note: The Bridge Admin Utility must have been selected for install while installing the BrR product.*

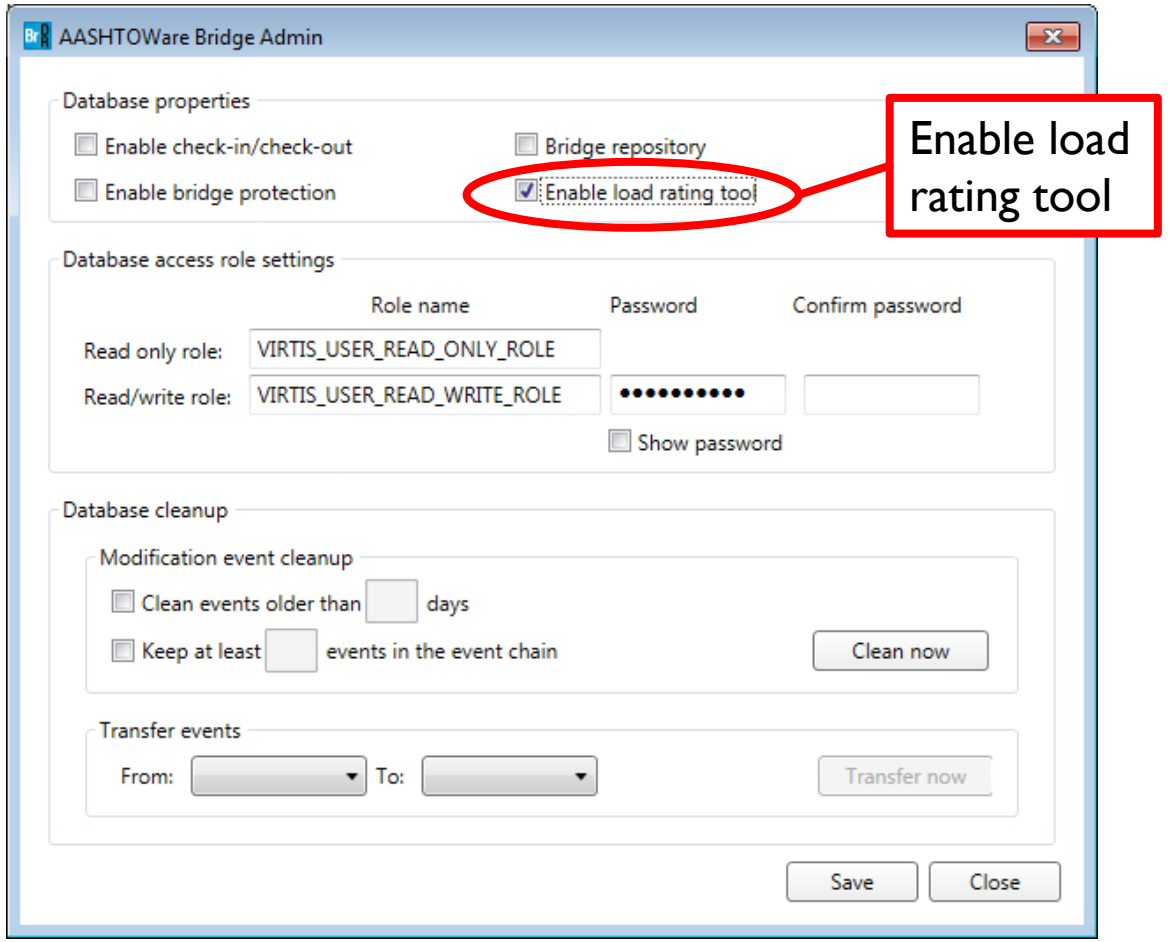
To enable the Load Rating Tool, open the AASHTOWare Bridge Admin Utility from the start menu shortcut, login with the appropriate credentials, and select "Enable Load Rating Tool". Press 'OK' or 'Apply' to accept the changes.



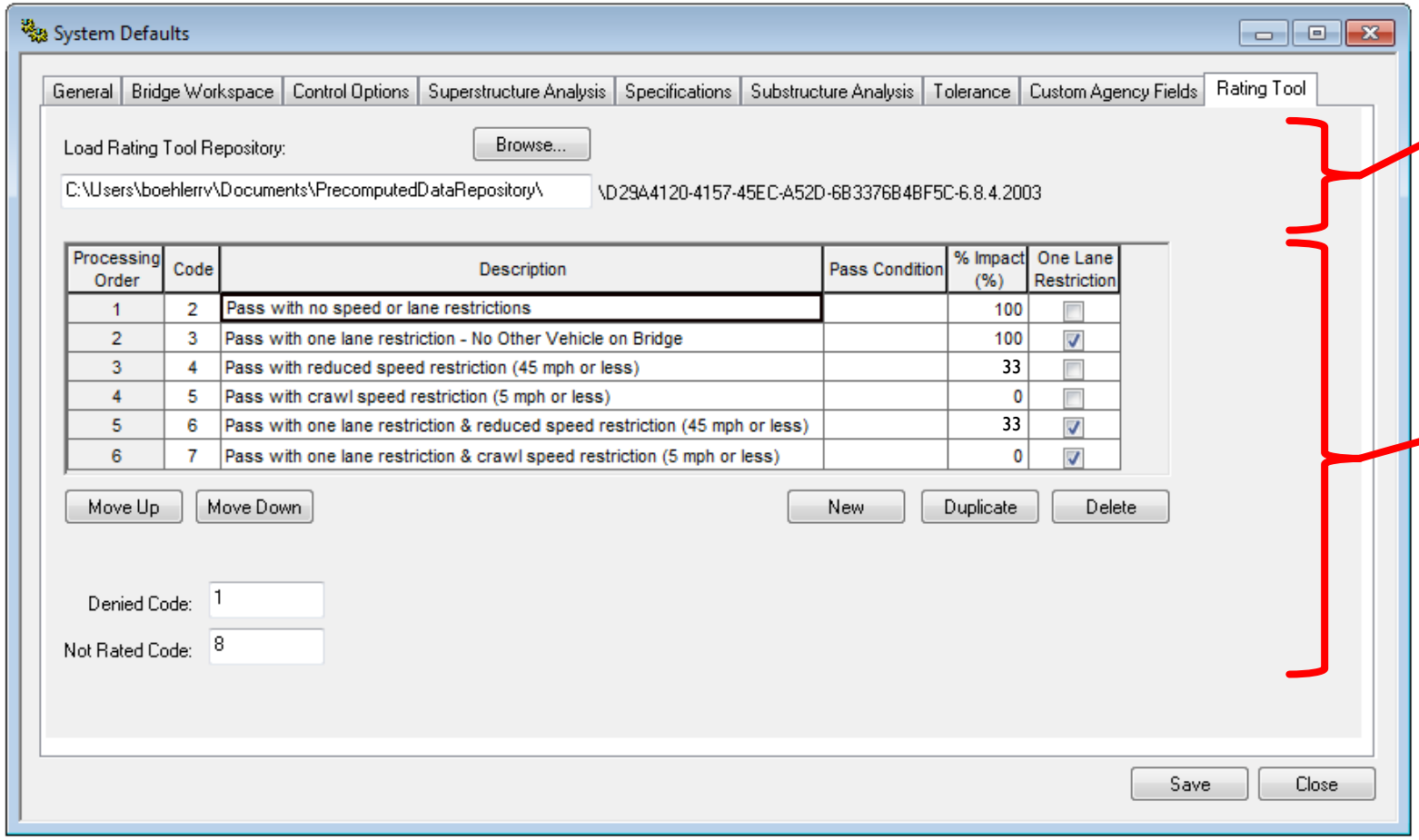
STEP 1 – CONFIGURE

- AASHTOWare Bridge Admin. Utility





STEP 1 – CONFIGURE



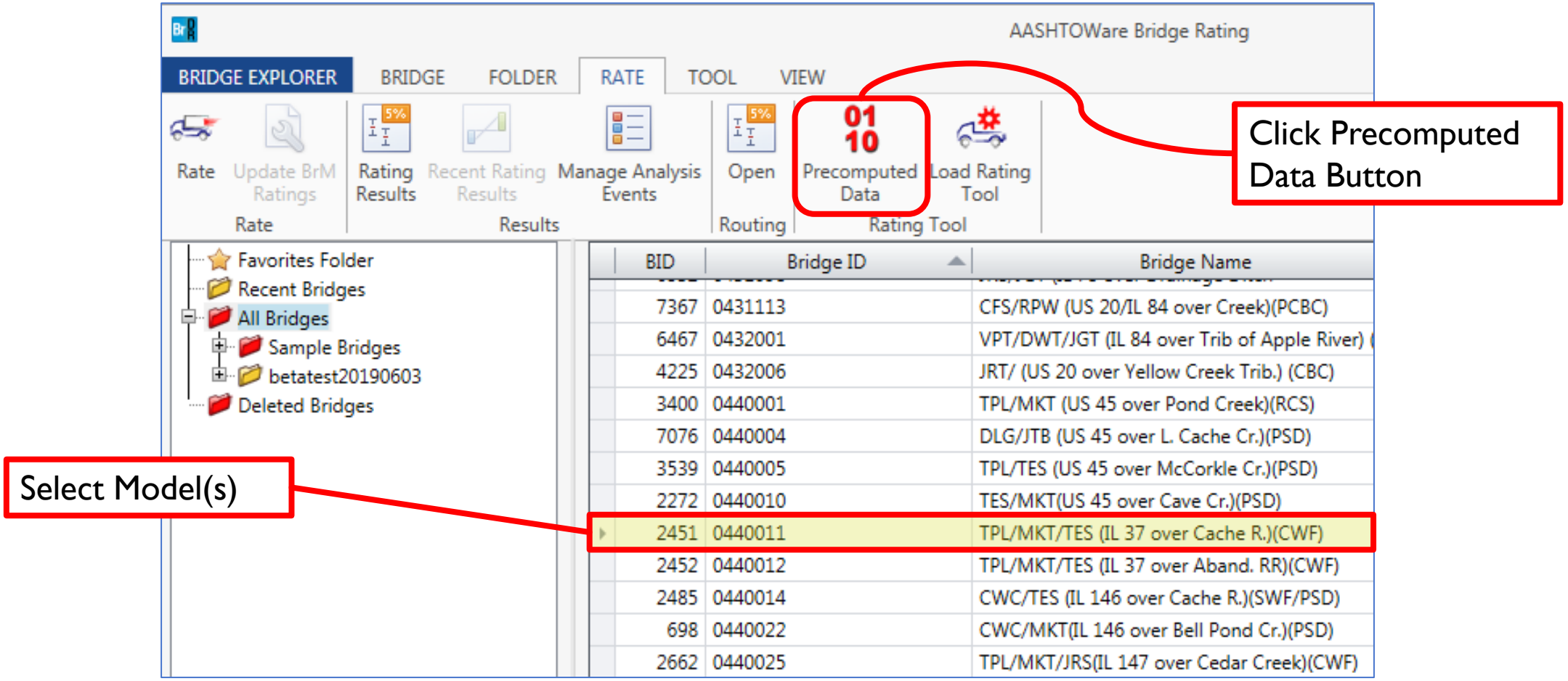
Specify were to save Precomputed Data Files

Specify:
Processing Order
Code to Return
Impact
Lane Restrictions

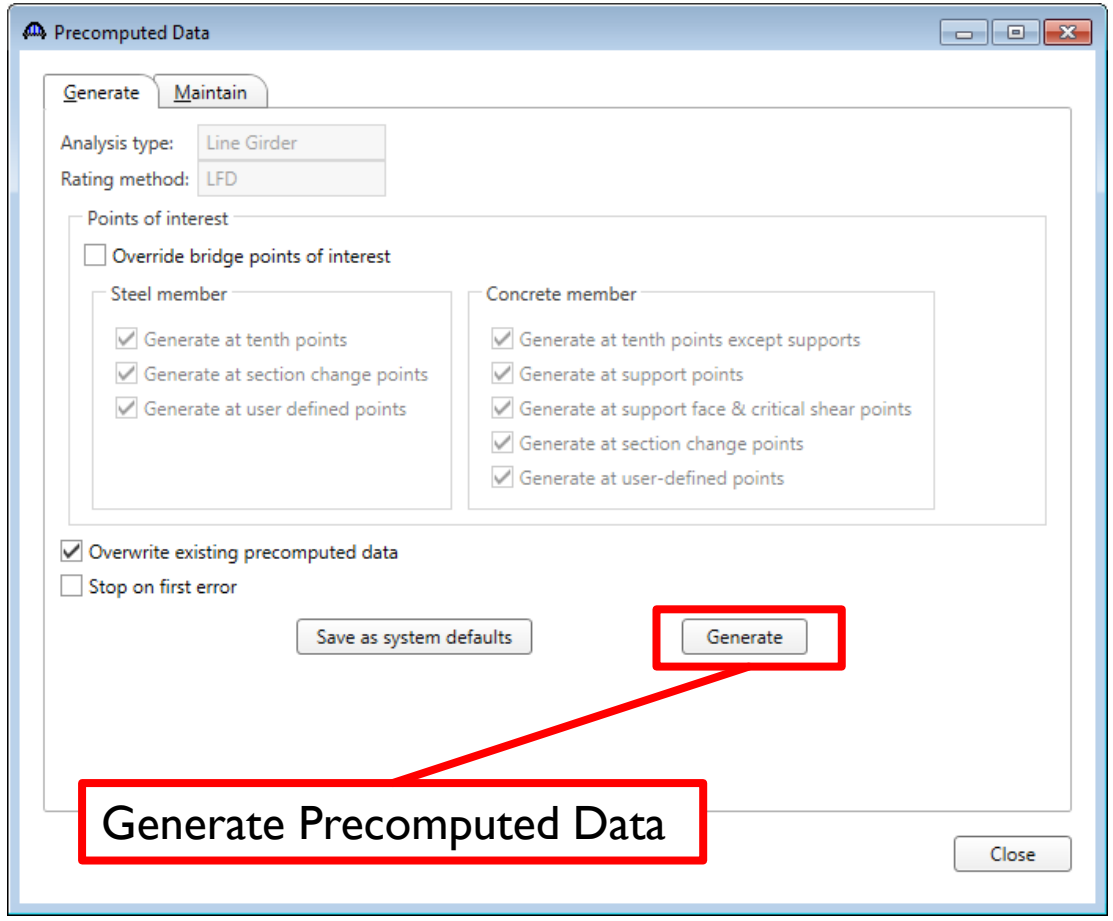
STEP 1 – CONFIGURE

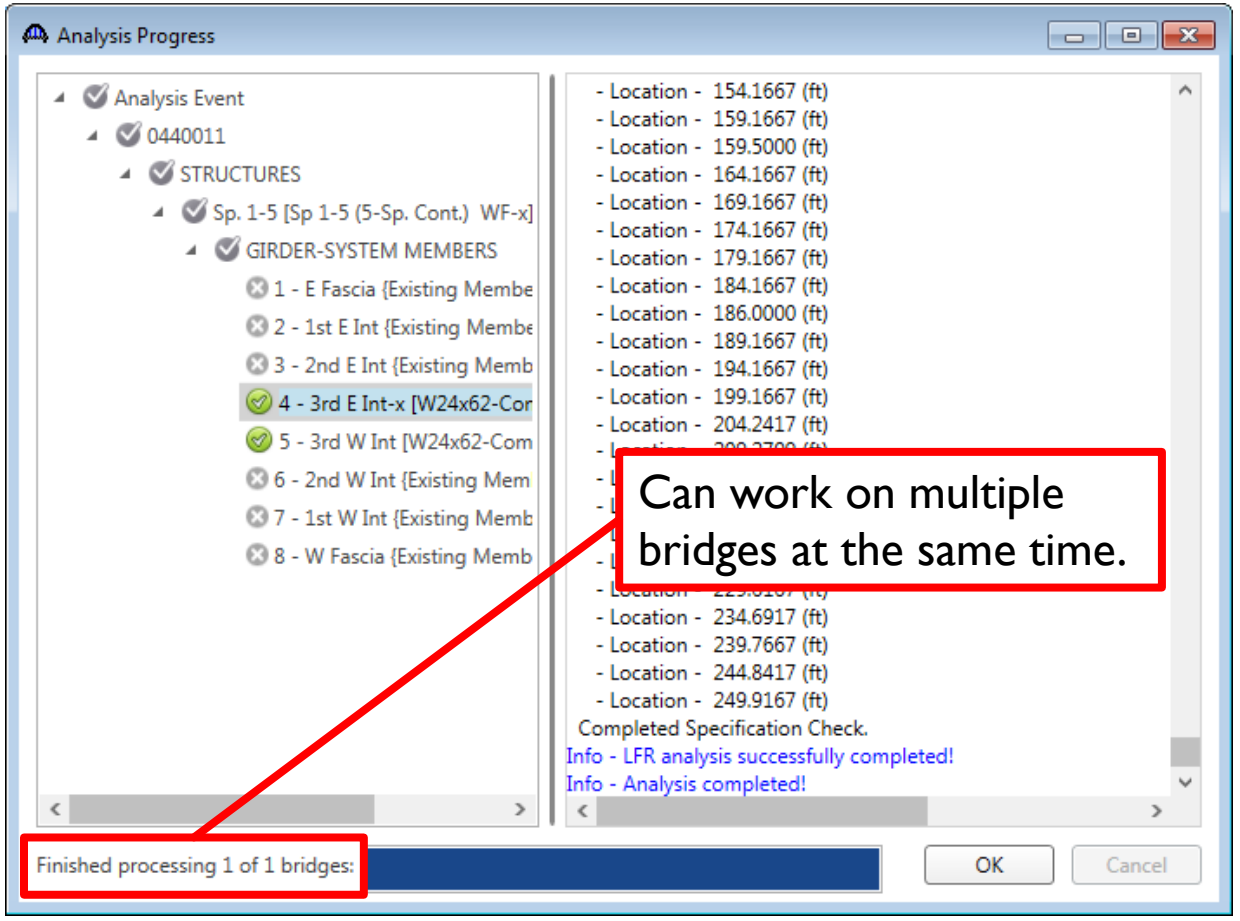
- Configuration has been Completed
- Only need to do this once
- Ready to Create Precomputed Data Files

STEP 2 – GENERATE PRECOMPUTED DATA

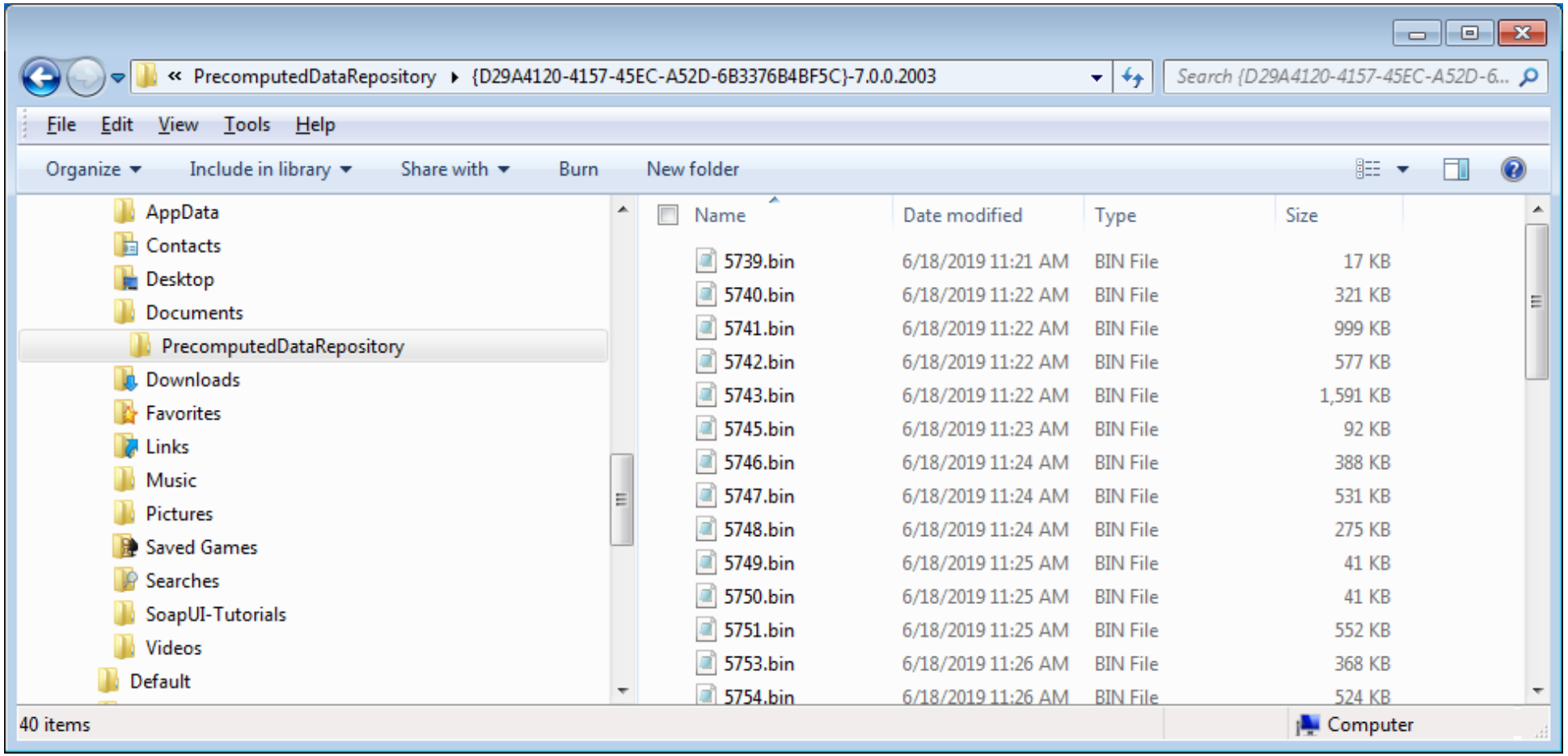


STEP 2 – GENERATE PRECOMPUTED DATA





STEP 2 – GENERATE PRECOMPUTED DATA



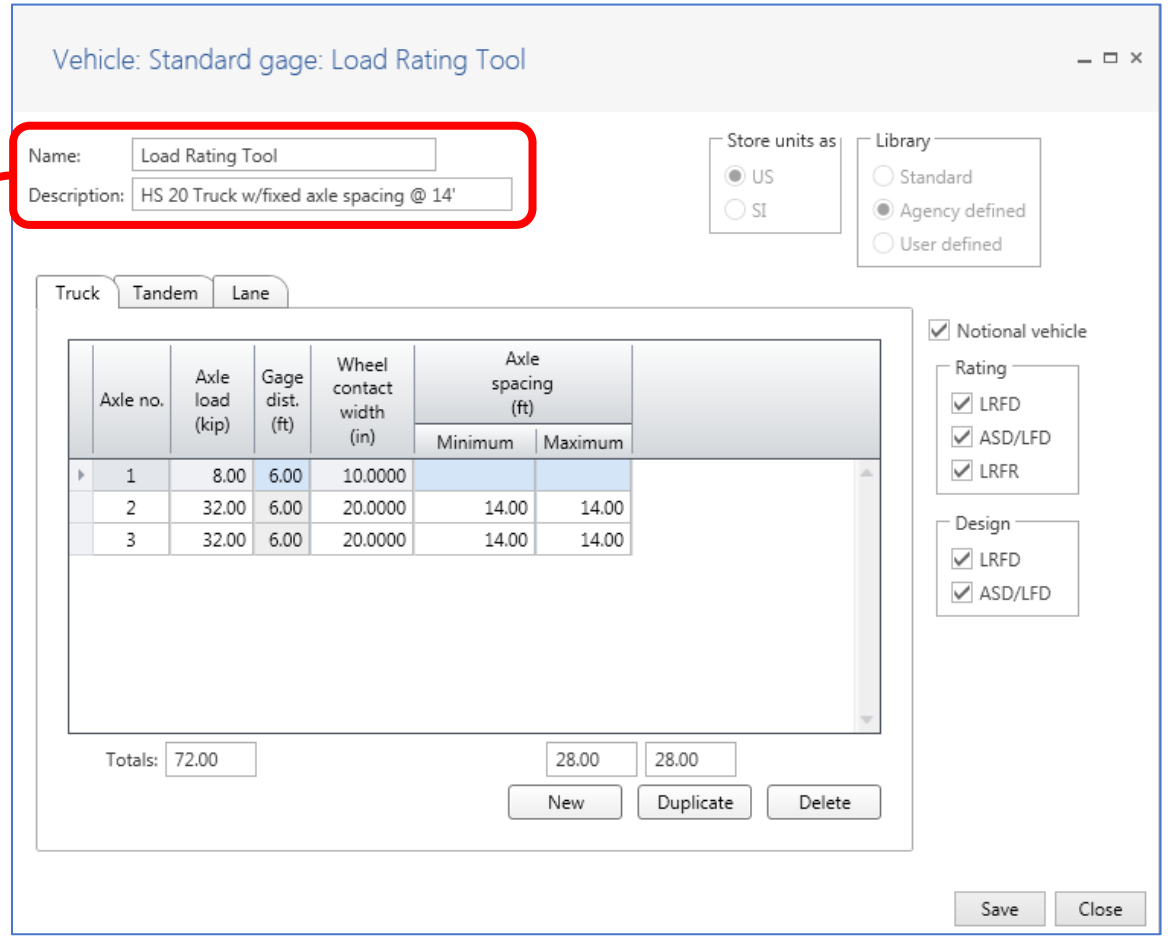
STEP 2 – GENERATE PRECOMPUTED DATA

- Precomputed Data has been Completed
- Need to do this each time a bridge is created or changed
- Ready to Analyze a Permit Vehicle

STEP 3 – ANALYZE PERMIT VEHICLE

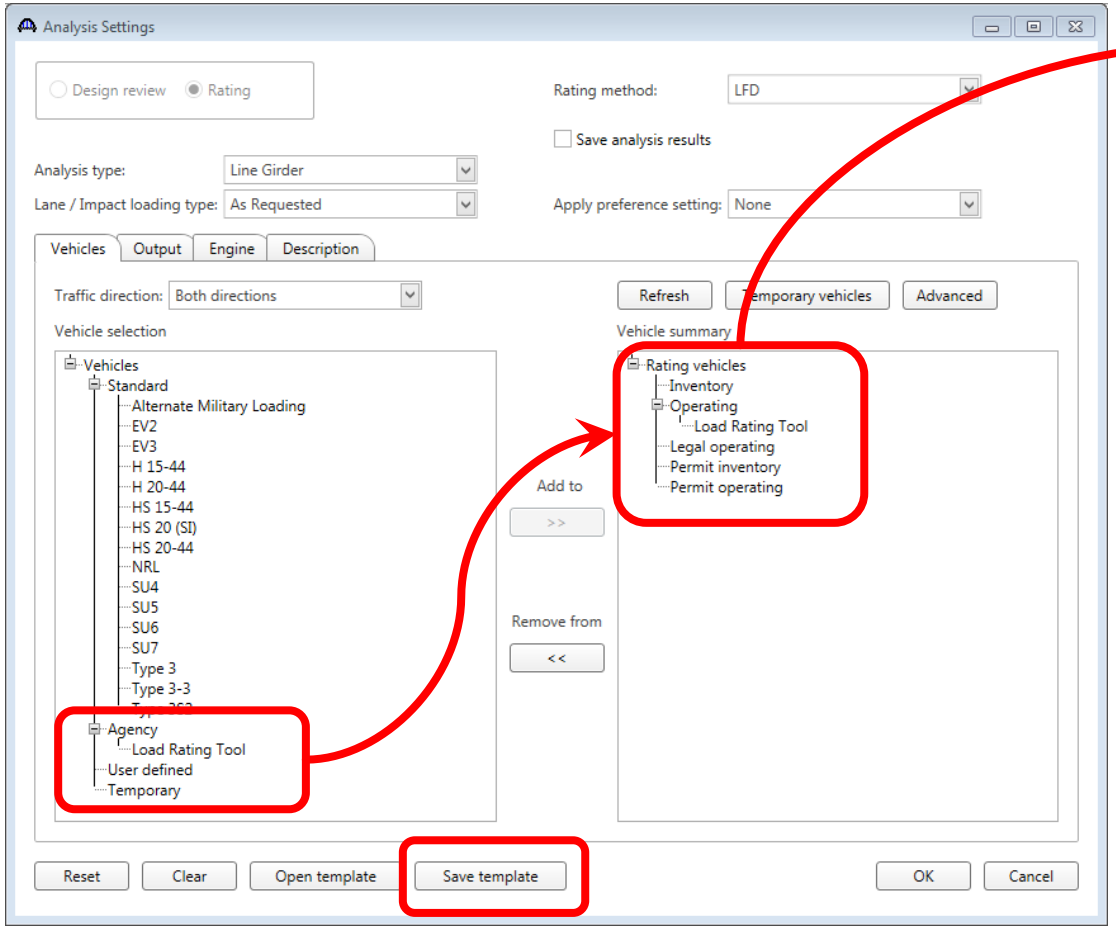
- Create Permit Vehicle
- Standard Gage Only

Example Vehicle
Name: Load Rating Tool



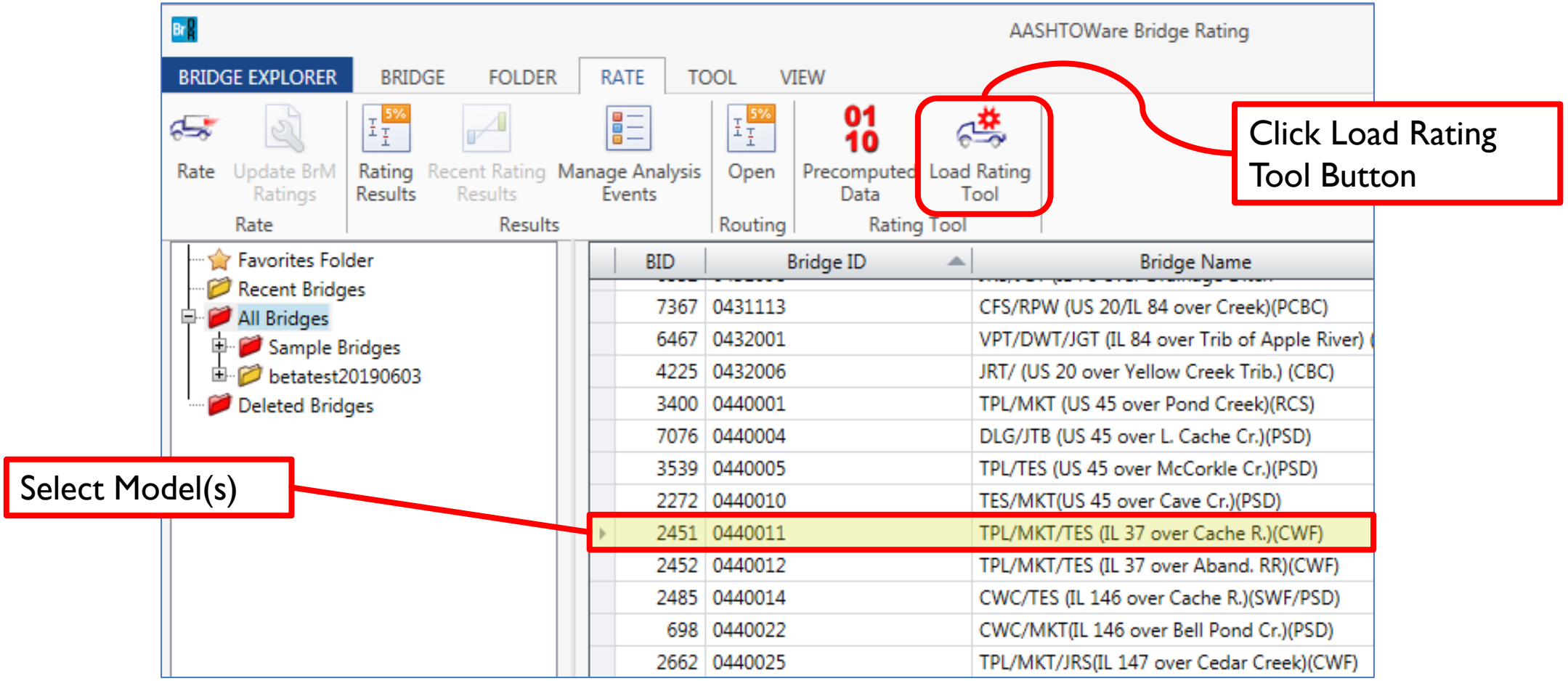
STEP 3 – ANALYZE PERMIT VEHICLE

- Create Analysis Template



Example Vehicle
Name: Load Rating Tool
Added to Operating Rating Category

STEP 3 – ANALYZE PERMIT VEHICLE

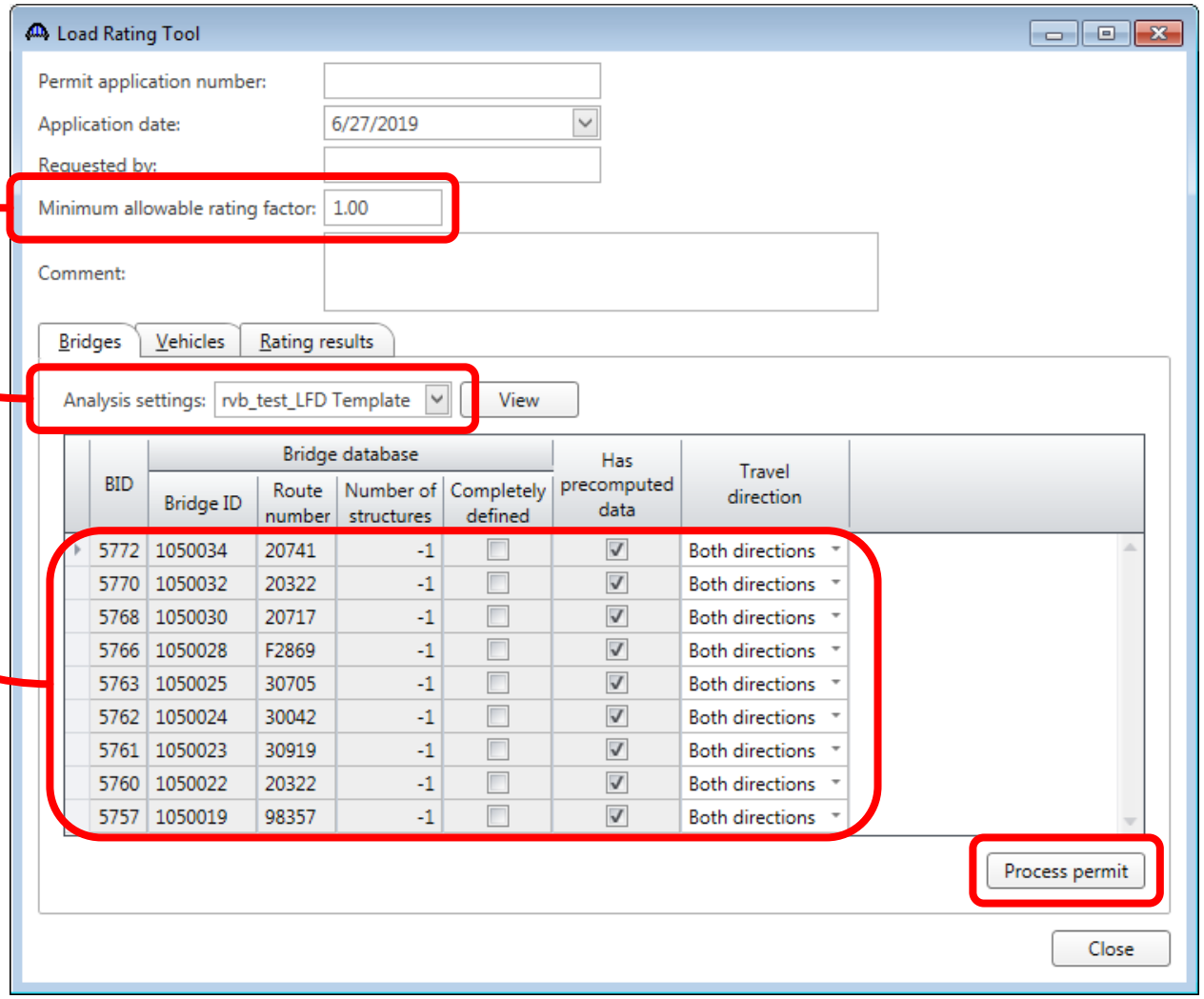


STEP 3 – ANALYZE PERMIT VEHICLE

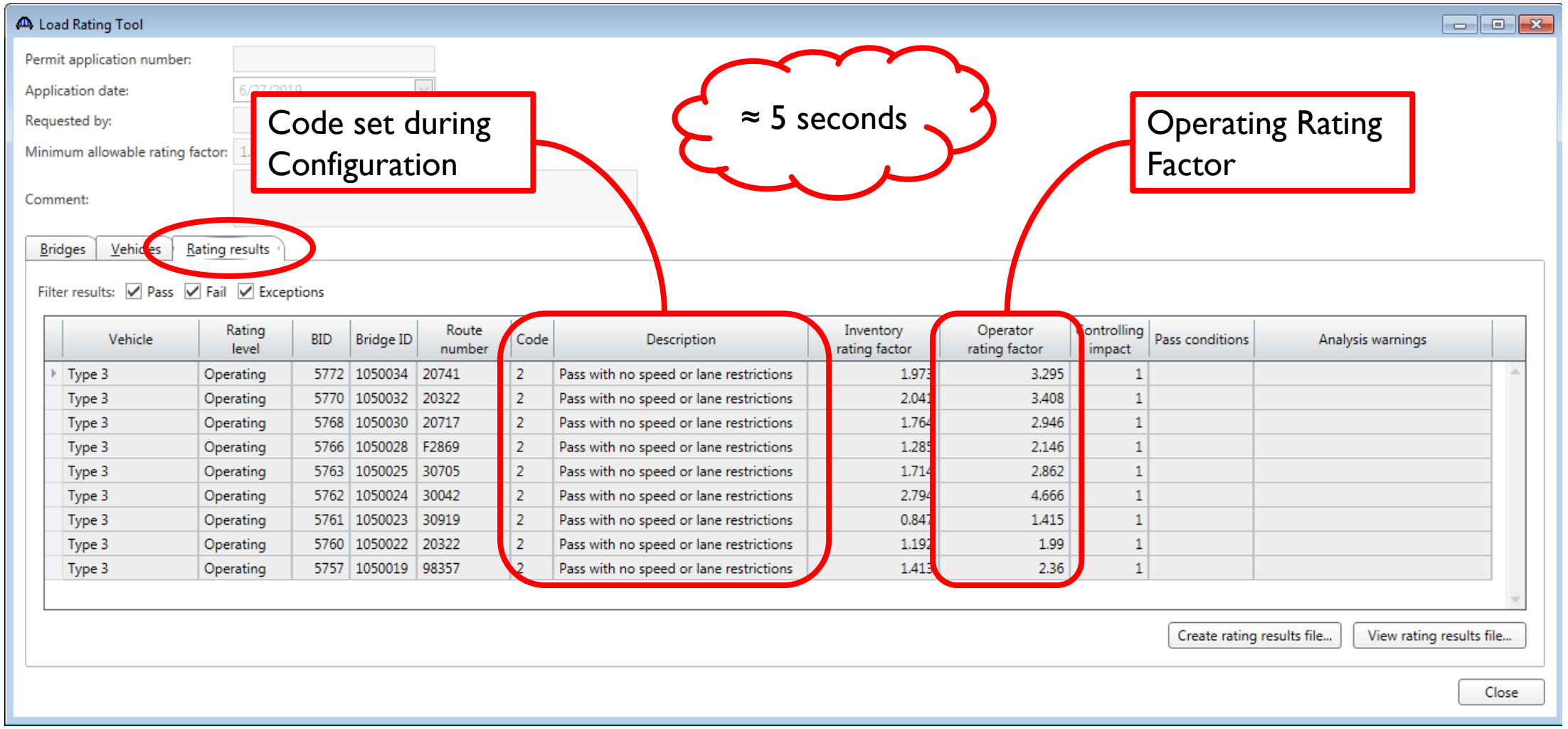
Minimum Allowable Rating Factor

Analysis Template

List of Bridges to be Analyzed

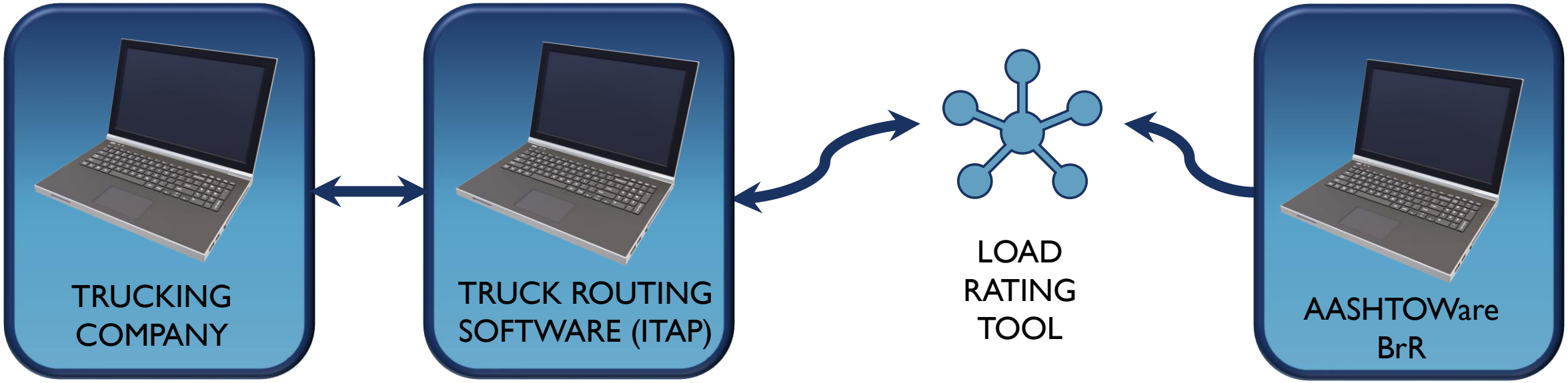


STEP 3 – ANALYZE PERMIT VEHICLE

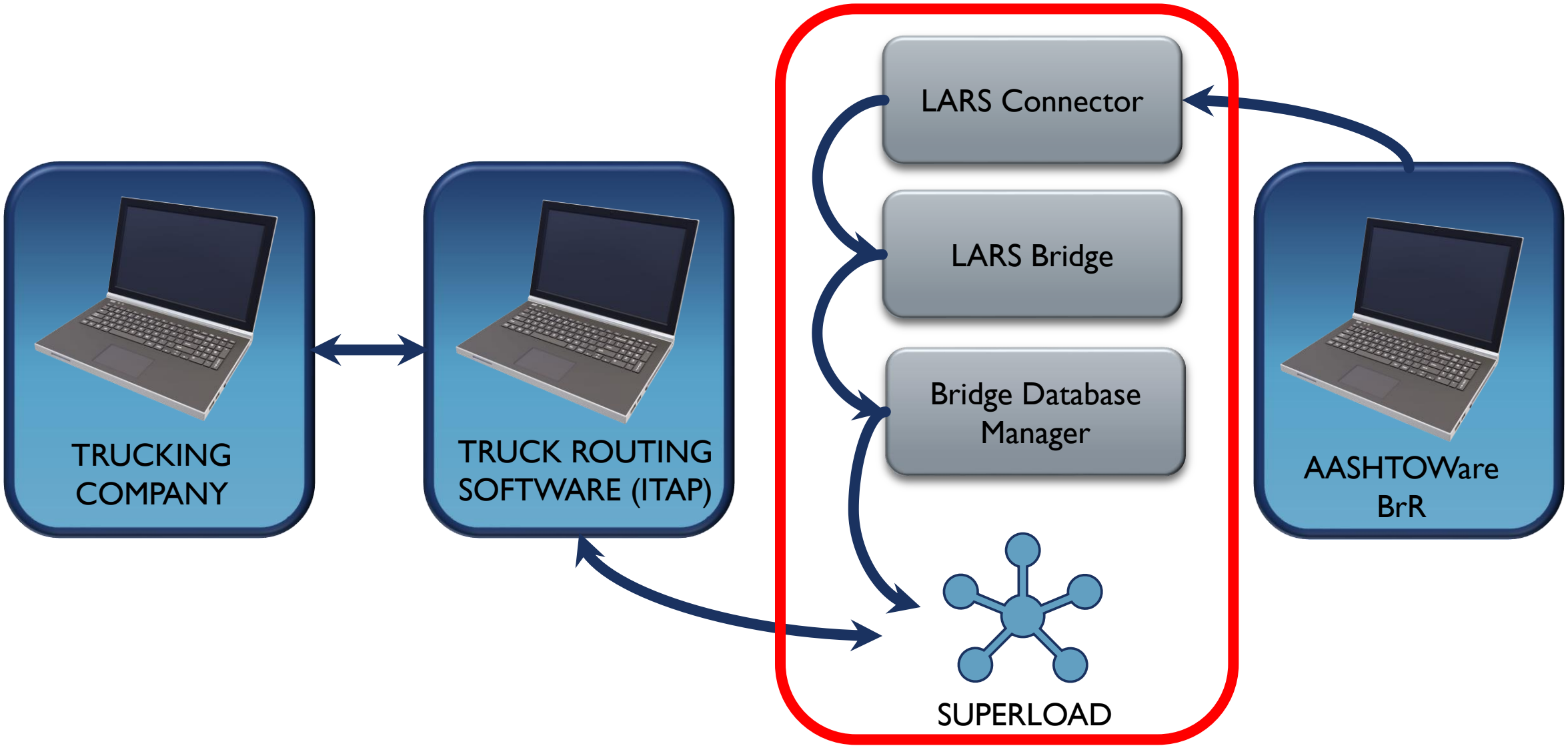


Vehicle	Rating level	BID	Bridge ID	Route number	Code	Description	Inventory rating factor	Operator rating factor	Controlling impact	Pass conditions	Analysis warnings
Type 3	Operating	5772	1050034	20741	2	Pass with no speed or lane restrictions	1.973	3.295	1		
Type 3	Operating	5770	1050032	20322	2	Pass with no speed or lane restrictions	2.041	3.408	1		
Type 3	Operating	5768	1050030	20717	2	Pass with no speed or lane restrictions	1.764	2.946	1		
Type 3	Operating	5766	1050028	F2869	2	Pass with no speed or lane restrictions	1.285	2.146	1		
Type 3	Operating	5763	1050025	30705	2	Pass with no speed or lane restrictions	1.714	2.862	1		
Type 3	Operating	5762	1050024	30042	2	Pass with no speed or lane restrictions	2.794	4.666	1		
Type 3	Operating	5761	1050023	30919	2	Pass with no speed or lane restrictions	0.847	1.415	1		
Type 3	Operating	5760	1050022	20322	2	Pass with no speed or lane restrictions	1.192	1.99	1		
Type 3	Operating	5757	1050019	98357	2	Pass with no speed or lane restrictions	1.413	2.36	1		

STEP 3 – ANALYZE PERMIT VEHICLE

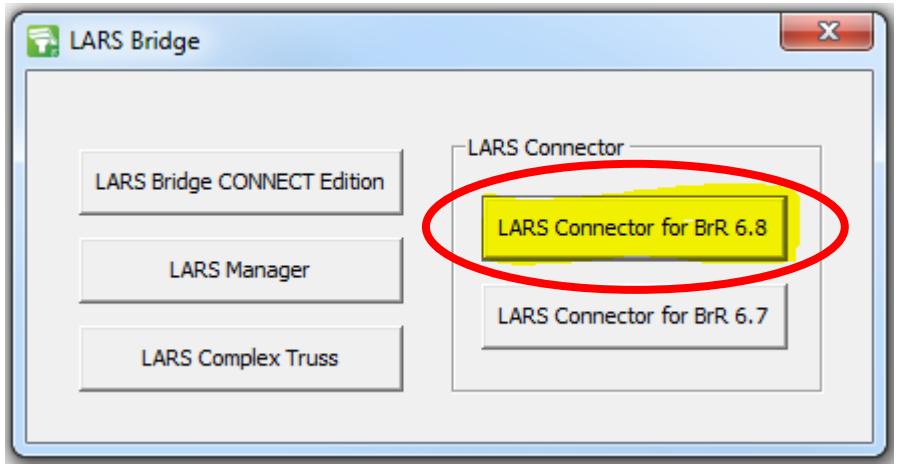


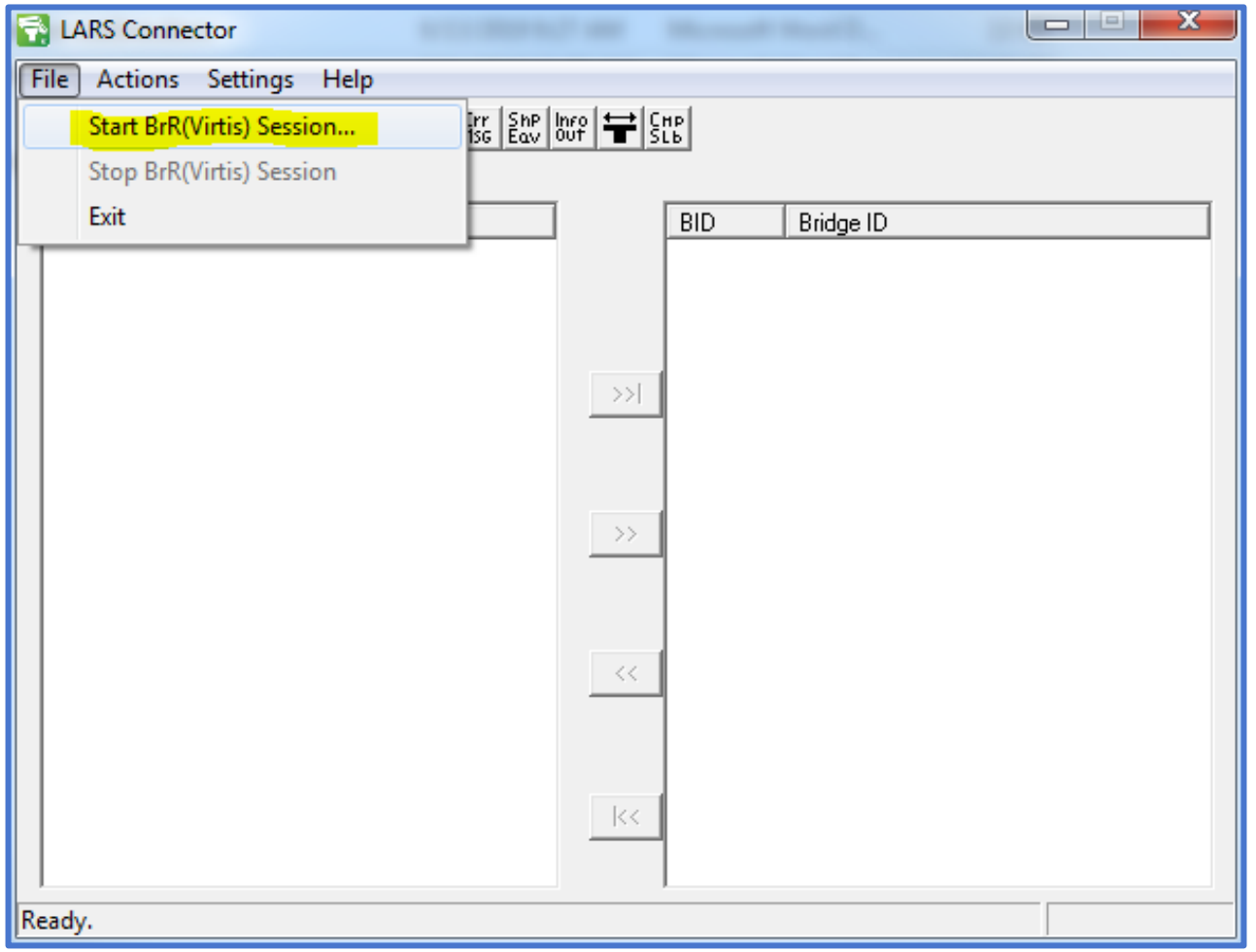
BENTLEY PROCESS



BENTLEY

- LARS Connector
- Convert AASHTOWare Bridge Model to LARS file (*.bmd)





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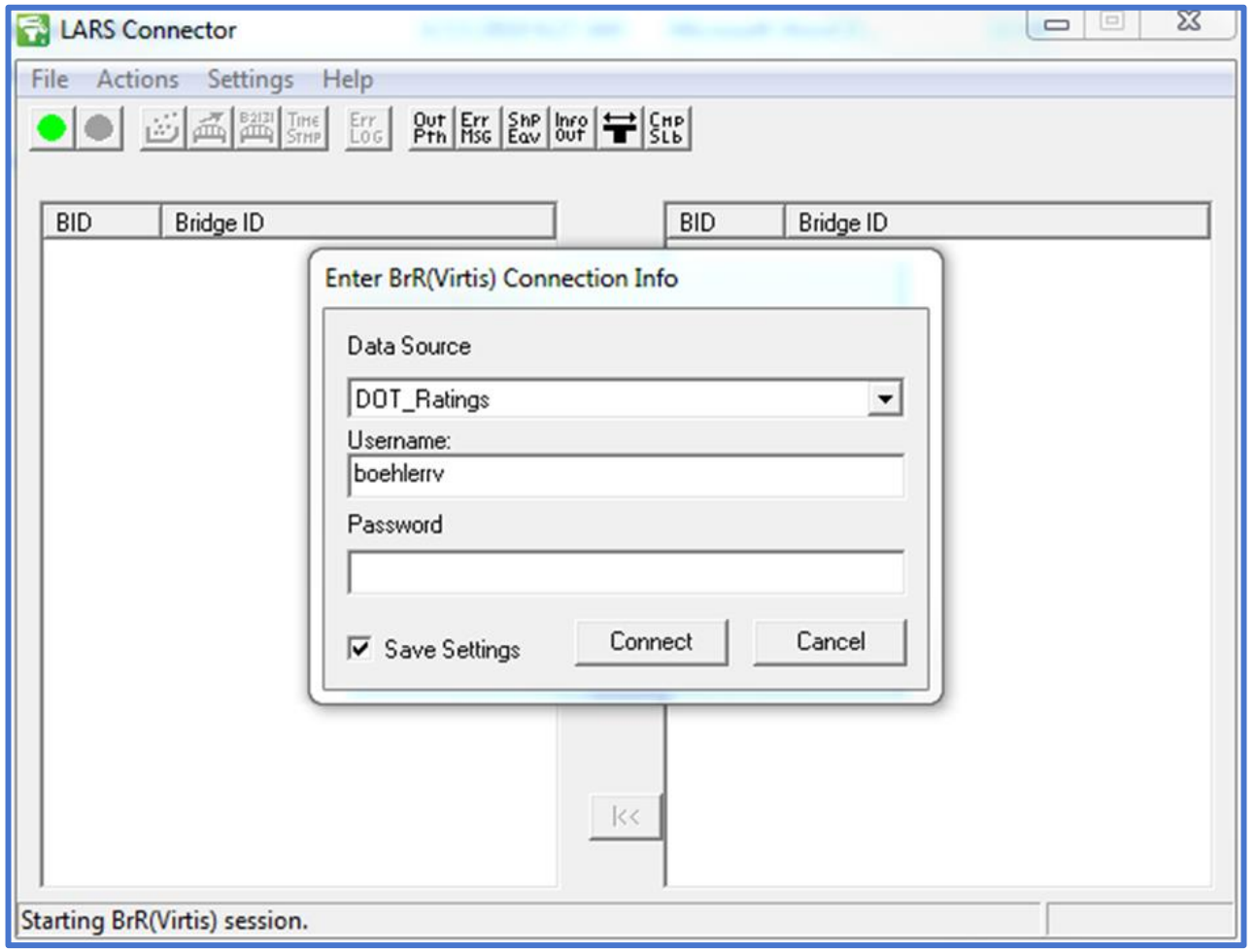

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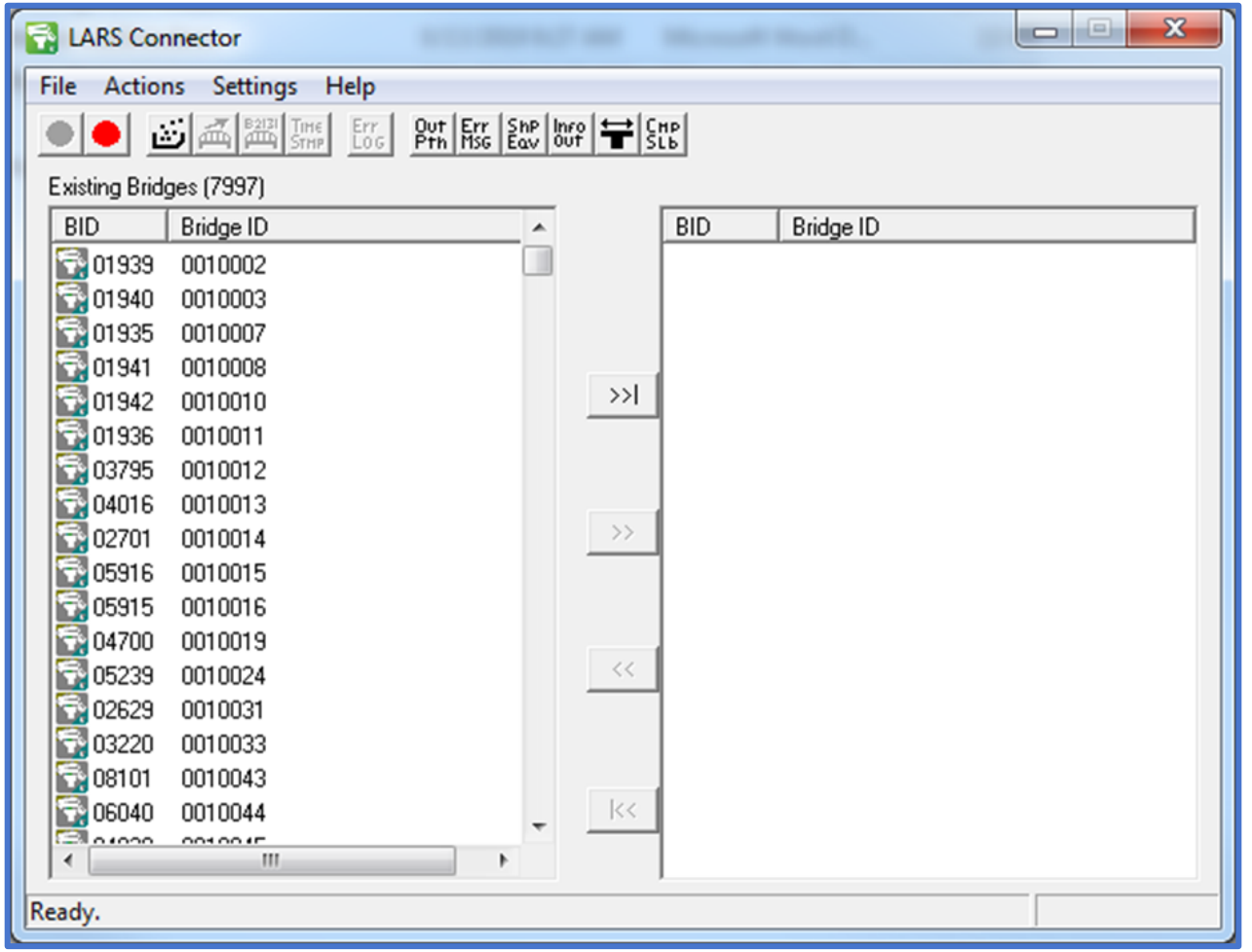

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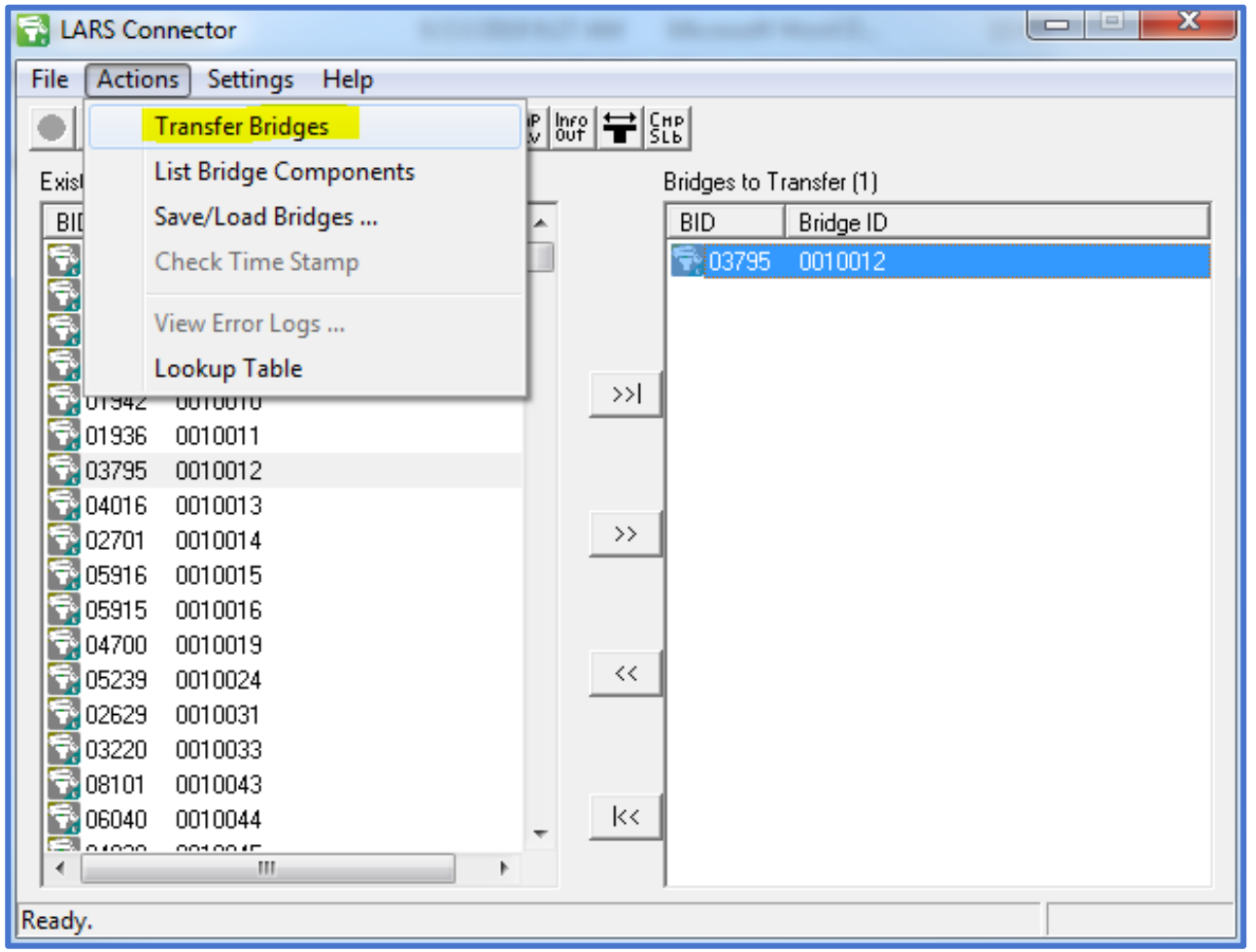
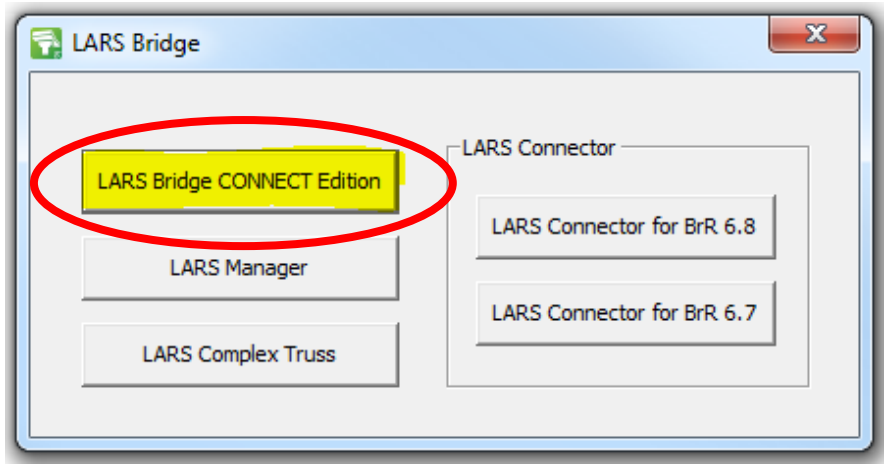
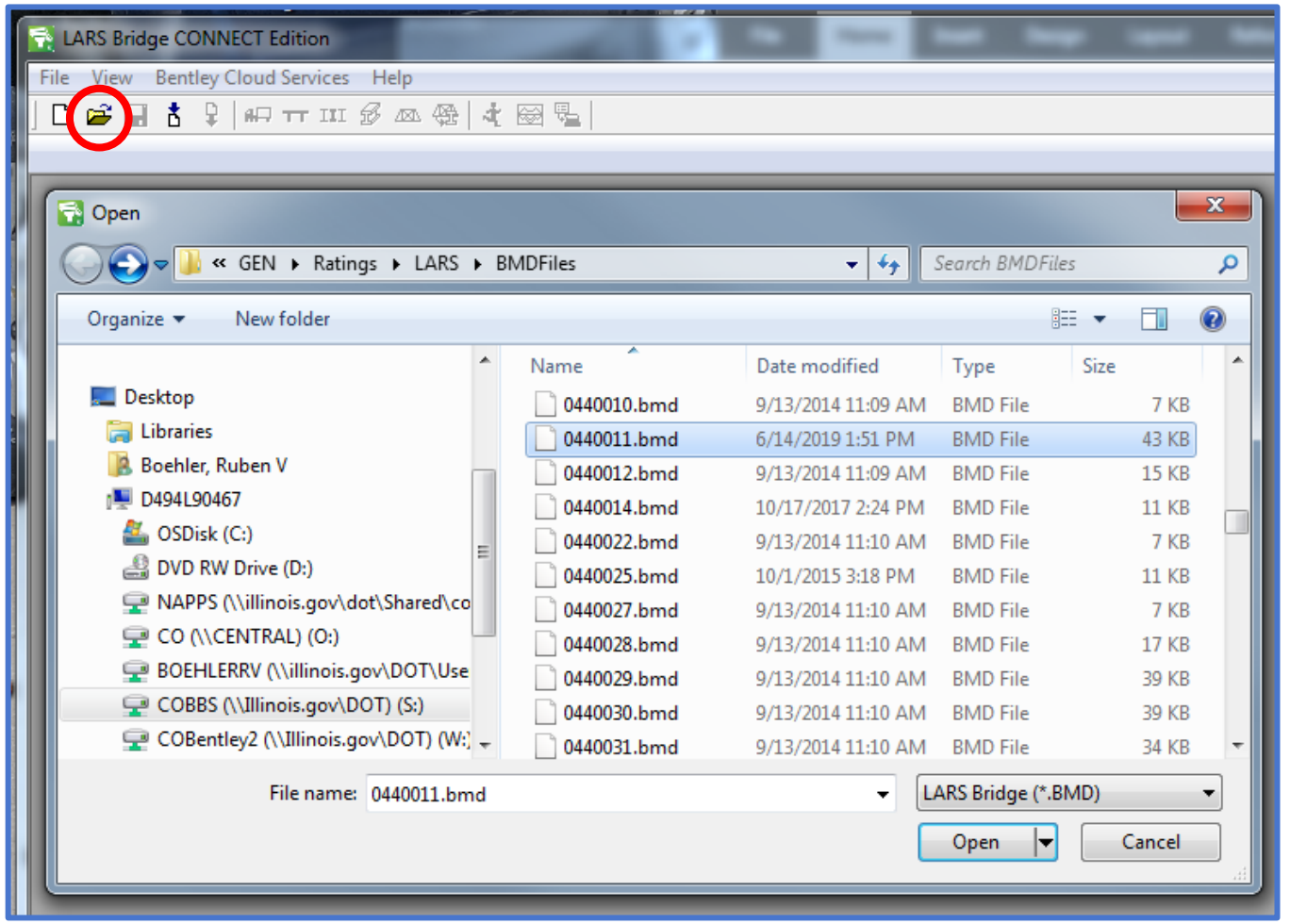


BENTLEY

- LARS Bridge CONNECT Edition
- Convert LARS file (*.bmd) to SUPERLOAD Transfer file (*.xfr)





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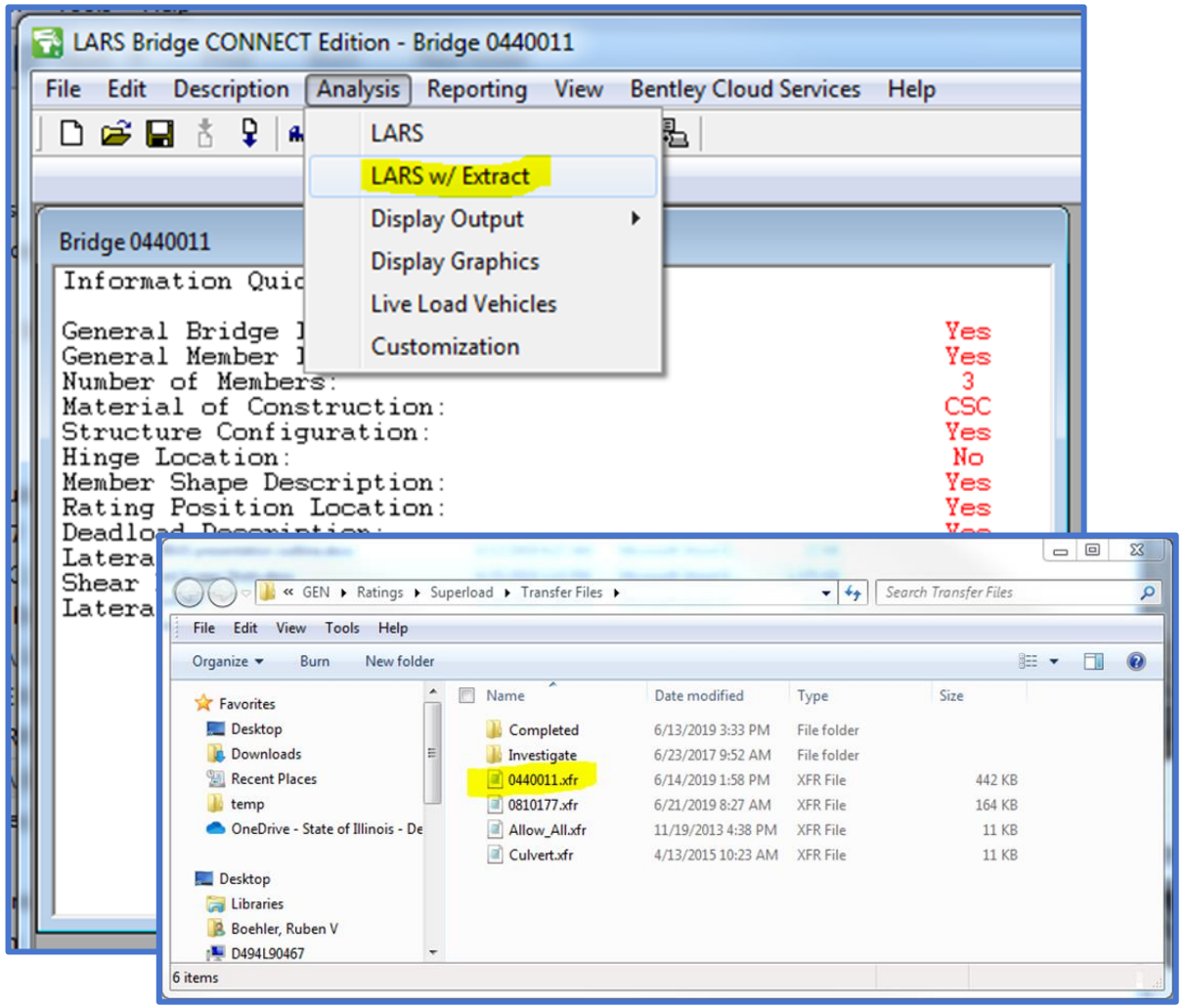
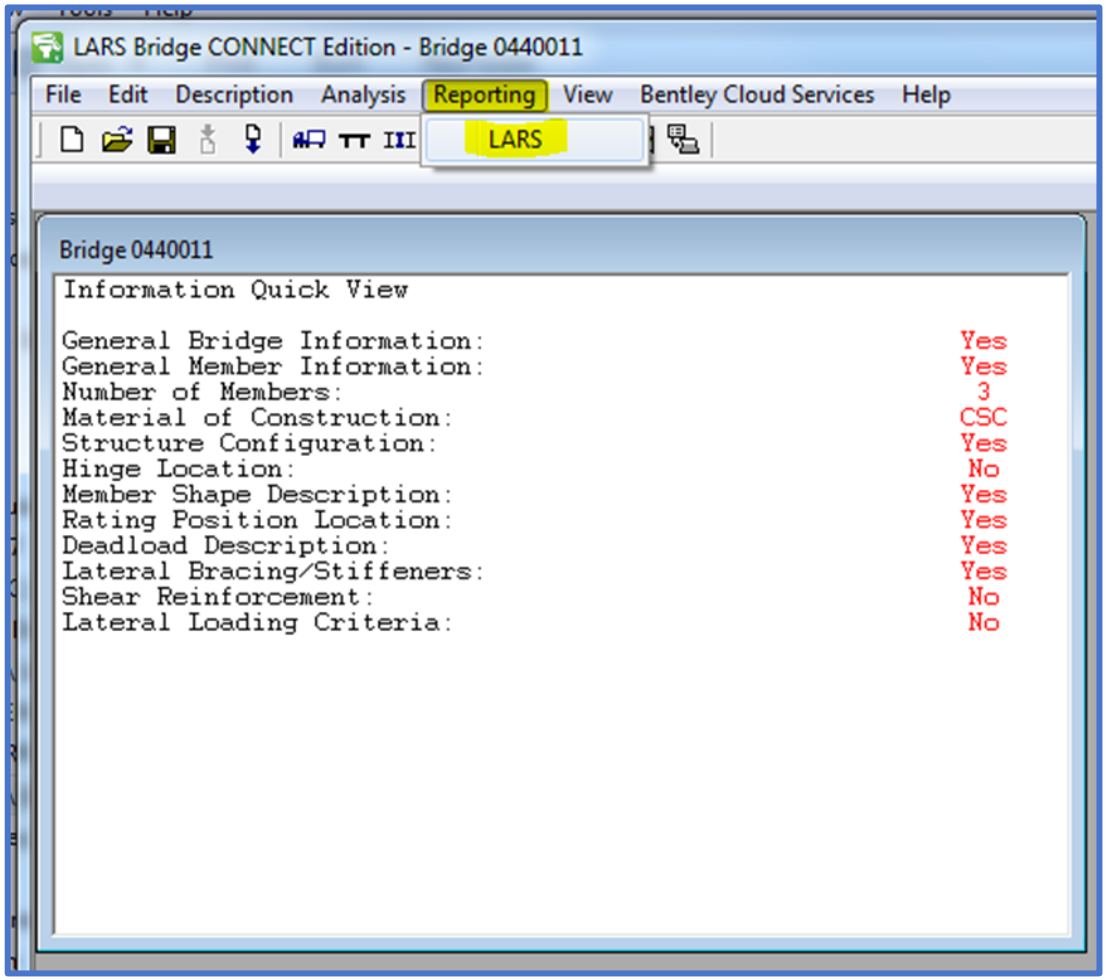


BENTLEY

- LARS Bridge CONNECT Edition
- Verify Load Rating



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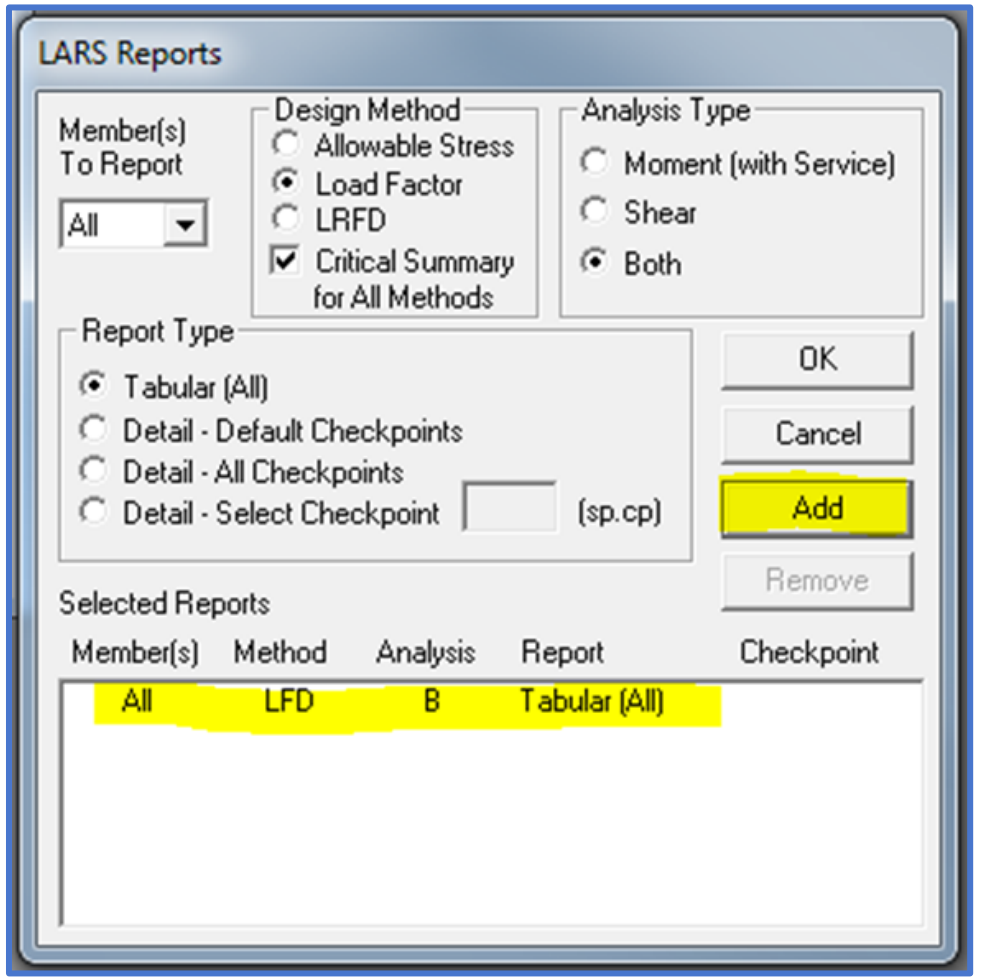

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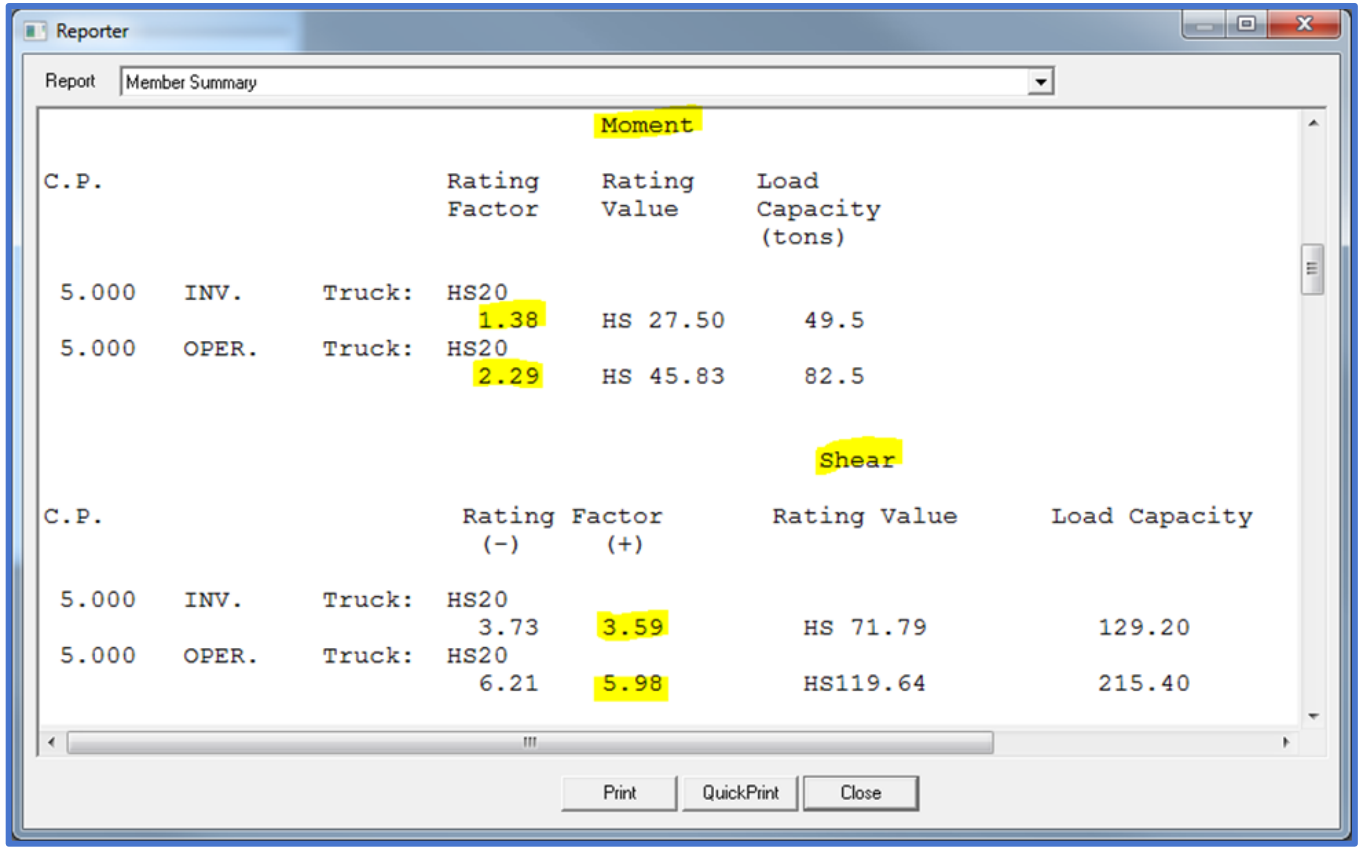
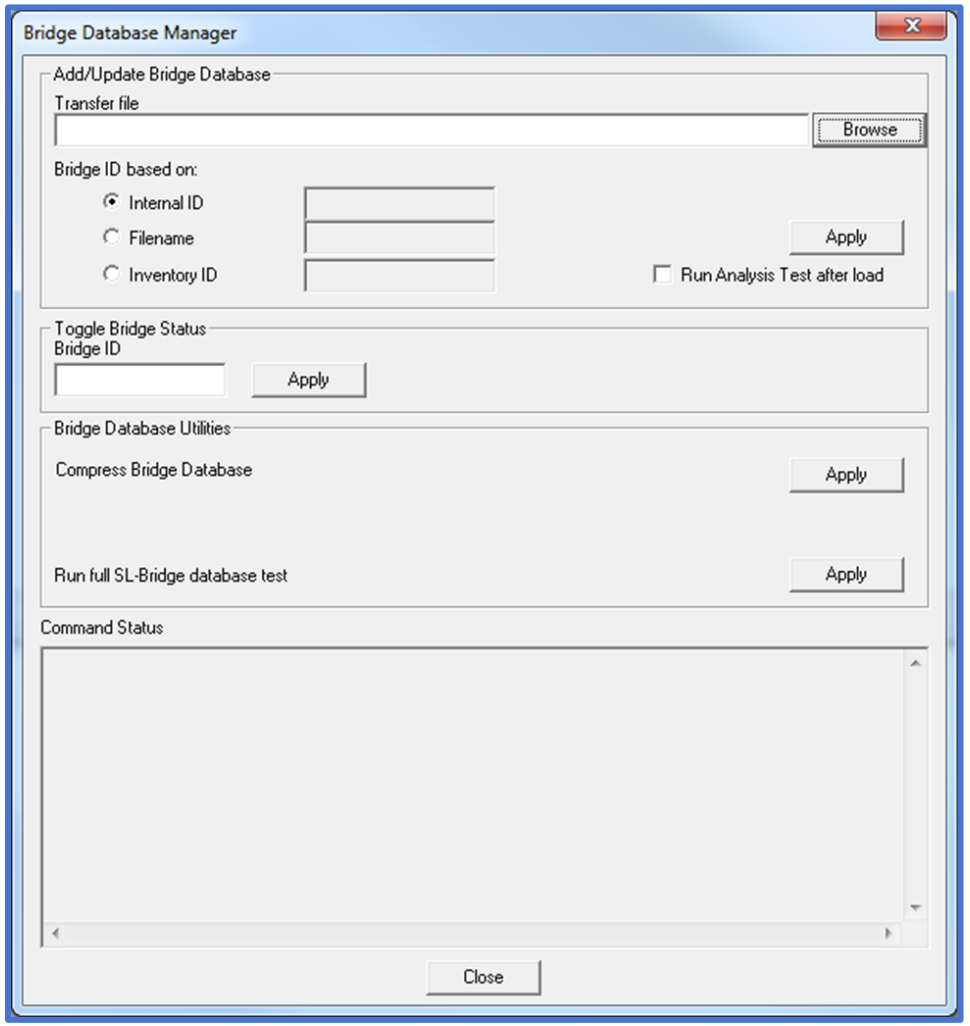


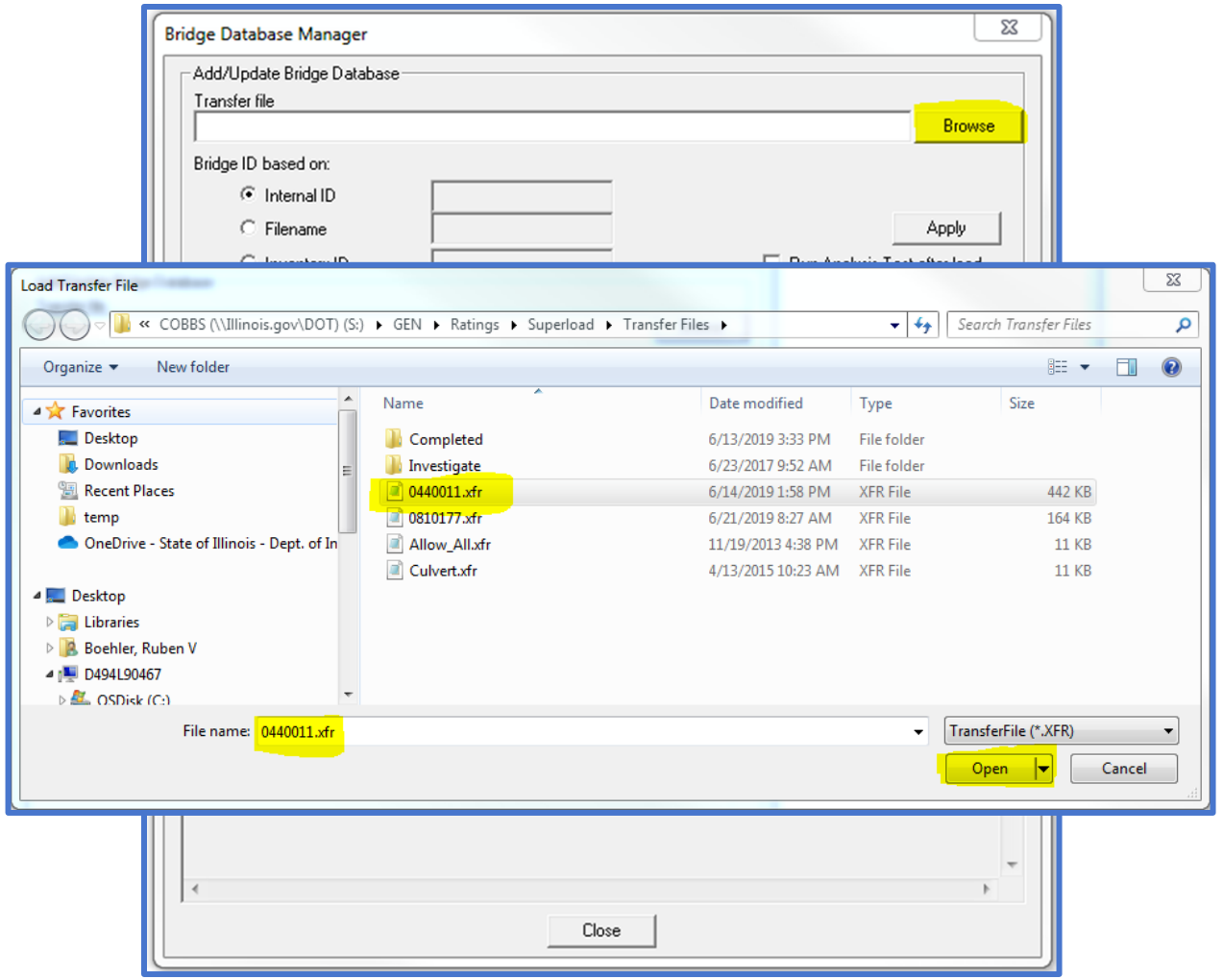
BENTLEY

- Bridge Database Manager
- Add SUPERLOAD Transfer file (*.xfr) to SUPERLOAD Bridge Database (*.ast, *.ddr & *.lib)



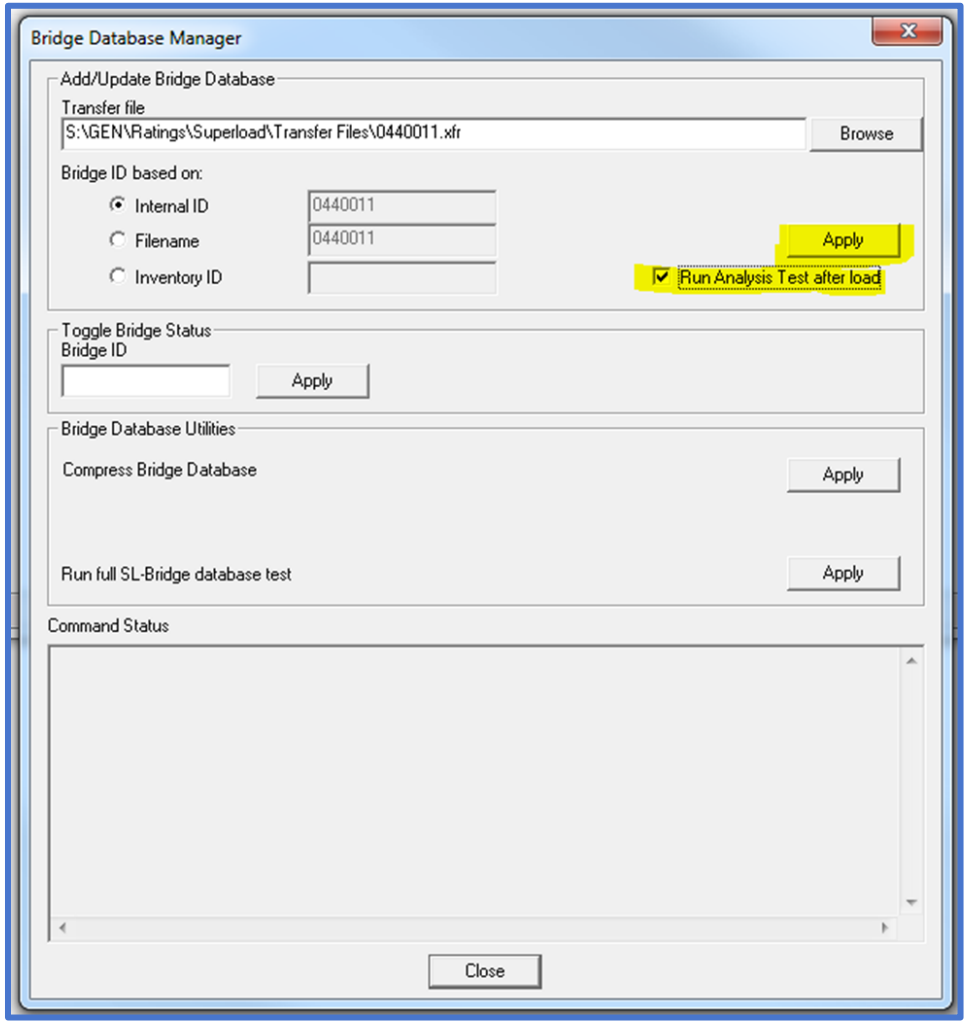
BENTLEY

- Bridge Database Manager
- Add SUPERLOAD Transfer file (*.xfr) to SUPERLOAD Bridge Database (*.ast, *.ddr & *.lib)
- Open file



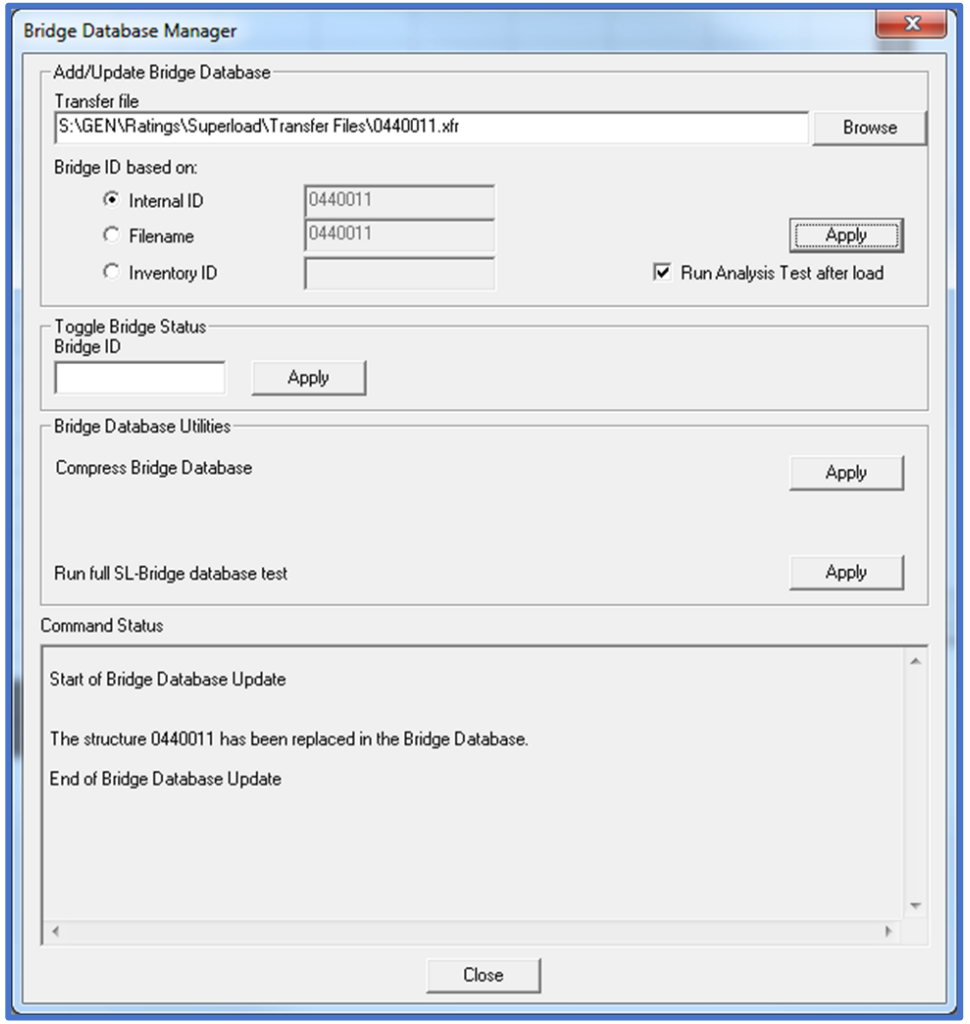
BENTLEY

- Bridge Database Manager
- Add SUPERLOAD Transfer file (*.xfr) to SUPERLOAD Bridge Database (*.ast, *.ddr & *.lib)
- Add file to database
- Test



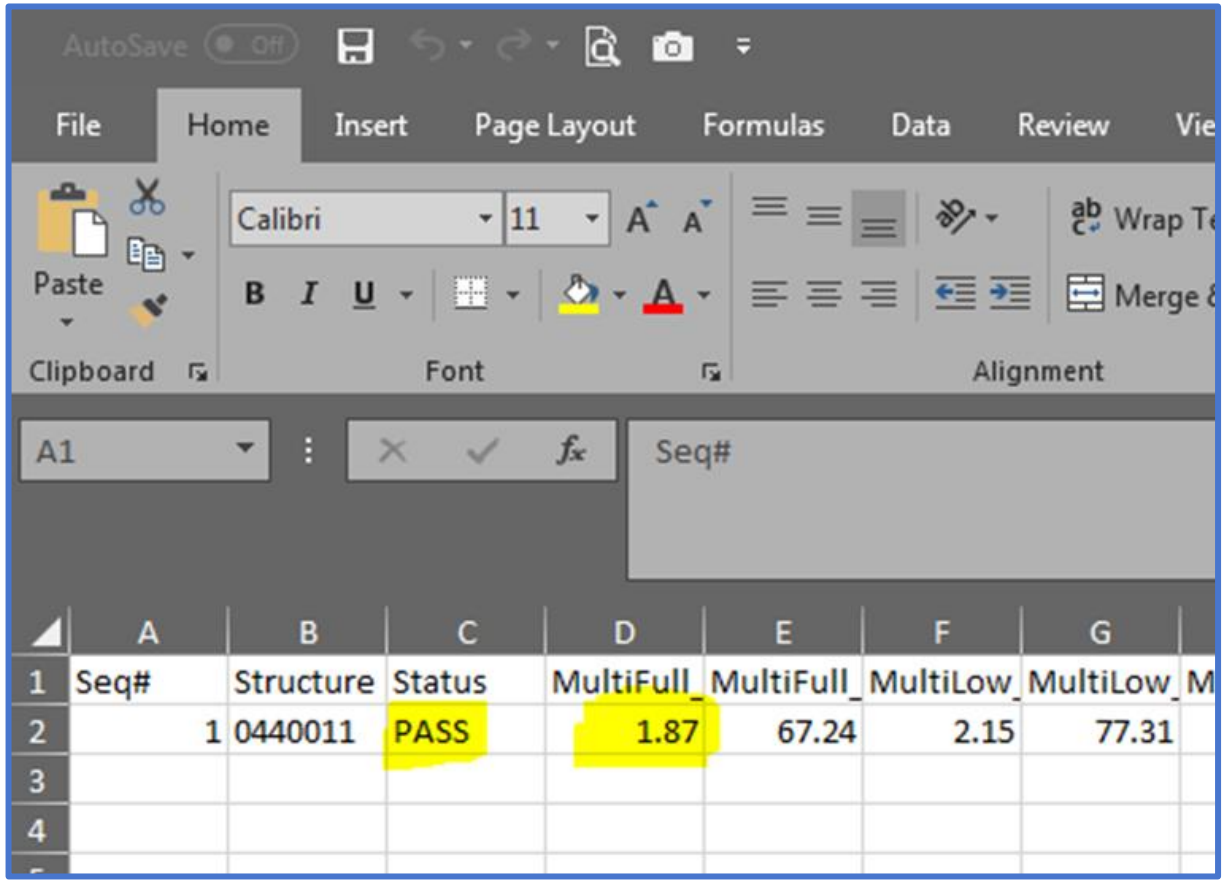
BENTLEY

- Bridge Database Manager
- Add SUPERLOAD Transfer file (*.xfr) to SUPERLOAD Bridge Database (*.ast, *.ddr & *.lib)
- Local Database Updated



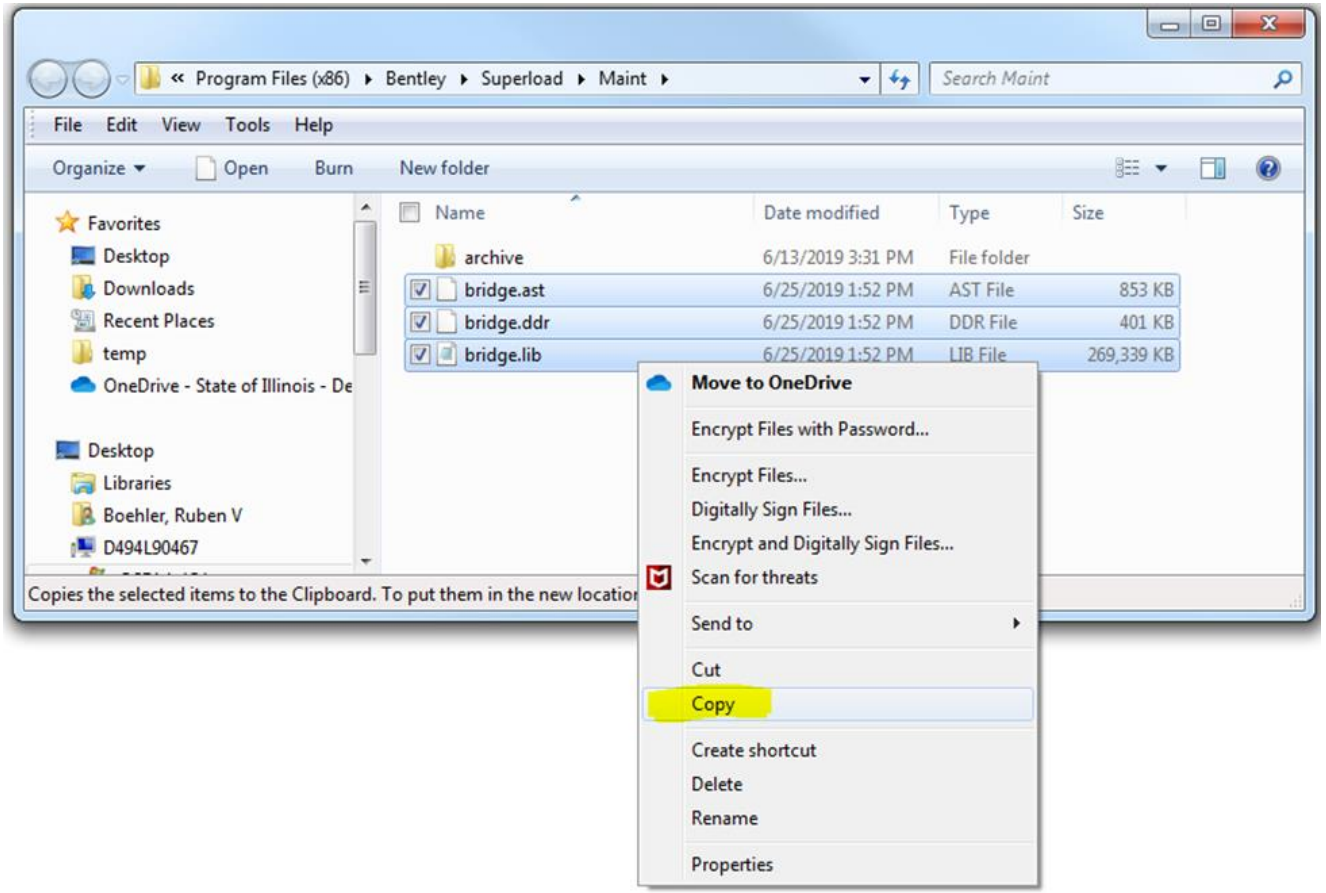
BENTLEY

- Bridge Database Manager
- Verify Load Rating



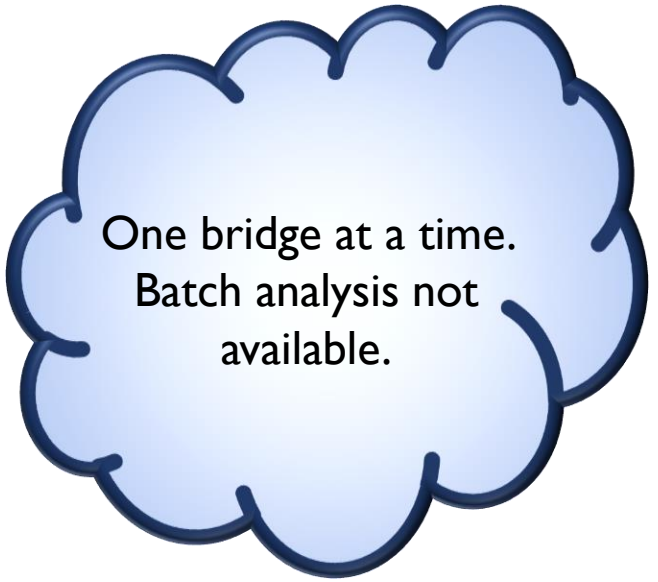
BENTLEY

- Copy SUPERLOAD Bridge Database (*.ast, *.ddr & *.lib)
- from Local PC
- to Web Deployment Location



PRECOMPUTED DATA MANAGEMENT SUMMARY

- Precomputed Data Experience:
  - AASHTOWare Process: 4 clicks
  - Bentley Process: 28 clicks
    - 6 clicks to convert AASHTOWare model to LARS model
    - 4 clicks to open LARS model
    - 4 clicks to analyze & create SUPERLOAD Transfer file
    - 5 clicks to verify LARS model
    - 4 clicks to create SUPERLOAD Database files
    - 5 clicks to copy from Local Drive to Web Deployment Location



THANK YOU