## USING THE RATING TOOL API



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AASHTOWare BrR 2024 RADBUG

## OVERVIEW

- AASHTOWare Load Rating Tool
  - BrR User Interface
    - How to set it up
    - How to use it
  - API Example
    - Out of the box
    - Customized

## LOAD RATING TOOL

- BrR User Interface
  - manage precomputed data
  - analyze permit loads

Br										AAS	HTOWare Bridge Rating
BRIDO	GE EXPLORER	BRIDO	GE FOLDER		RATE	тс	DOL V	IEW			
🖙 Rate	Update BrM Ratings	I I Rating Results	Recent Rating Results	Mai	nage An Events	alysis	I I Open	01 10 Precomputer Data	d Load T	Rating ool	
	Rate		Results				Routing	Ratin	ng Tool		
	Favorites Fol	der			B	ID	E	Bridge ID			Bridge Name
←					7367	0431113			CFS/RPV	V (US 20/IL 84 over Creek)(PCBC)	
					6467	0432001			VPT/DW	/T/JGT (IL 84 over Trib of Apple River) (	
					4225	0432006			JRT/ (US	20 over Yellow Creek Trib.) (CBC)	
🎽	Deleted Bridg	ges				3400	0440001			TPL/MK	T (US 45 over Pond Creek)(RCS)
						7076	0440004			DLG/JTB	8 (US 45 over L. Cache Cr.)(PSD)
					3539	0440005			TPL/TES	(US 45 over McCorkle Cr.)(PSD)	
					2272	0440010			TES/MK	T(US 45 over Cave Cr.)(PSD)	
					•	2451	0440011			TPL/MK	T/TES (IL 37 over Cache R.)(CWF)
						2452	0440012			TPL/MK	T/TES (IL 37 over Aband. RR)(CWF)
						2485	0440014			CWC/TE	S (IL 146 over Cache R.)(SWF/PSD)
						698	0440022			CWC/M	KT(IL 146 over Bell Pond Cr.)(PSD)
						2662	0440025			TPL/MK	T/JRS(IL 147 over Cedar Creek)(CWF)

## STEP I – CONFIGURE

## AASHTOWare Bridge Admin. Utility

All apps	< Back
А	
AASHTOWare BrDR 73	
Admin Utility 7.3	
ARC Tool Arc Tool 7.3	
Bridge Copy Utility 7.3	
BrD Bridge Design 7.3	
Br Bridge Design and Rating 7.3	
Bridge Rating 7.3	
Migration Wizard 7.3	
Access	
Accessibility	
Add Network Printer(s)	
Adaba Assabat	

AASHTOWare E	Bridge Admin		×						
Database proper	rties								
Enable Check	-In/Check-Out 🗌 Bridge Repositor	y 🗌 Bride	Enable load						
Enable Bridge	e Protection 🛛 🗹 Enable Load Rati	ng Tool 📃 Enat	rating tool						
Database access	role settings		<b>_</b>						
	Role name	Password	Confirm password						
Read only role:	VIRTIS_USER_READ_ONLY_ROLE								
Read/write role:	VIRTIS_USER_READ_WRITE_ROLE	•••••	•••••						
		Show password							
Database cleanu	ID								
☐ Modification	event cleanup								
Clean ever									
	us oraci atan								
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Transfer even	ts								
From:	То:	~	Transfer now						
			Save Close						

## STEP I – CONFIGURE

Processing orderCodeDescriptionPass condition% impact (%)One lane restriction12Pass, no restrictions100Impact24Pass, reduced speed (45 mph or less)33Impact33Pass, one lane and reduced speed (45 mph or less)33Impact46Pass, one lane and reduced speed (45 mph or less)33Impact55Pass, crawl speed (5 mph or less)0Impact67Pass, one lane and crawl speed (5 mph or less)0Impact
1       2       Pass, no restrictions       100         2       4       Pass, reduced speed (45 mph or less)       33         3       3       Pass, one lane restriction - No Other Vehicle on Bridge       100         4       6       Pass, one lane and reduced speed (45 mph or less)       33         5       5       Pass, crawl speed (5 mph or less)       0         6       7       Pass, one lane and crawl speed (5 mph or less)       0
2       4       Pass, reduced speed (45 mph or less)       33       Specify:         3       3       Pass, one lane restriction - No Other Vehicle on Bridge       100       Image: Specify:       Processing Order         4       6       Pass, one lane and reduced speed (45 mph or less)       33       Image: Specify:       Processing Order         5       5       Pass, crawl speed (5 mph or less)       0       Image: Specify:       Code to Return         6       7       Pass, one lane and crawl speed (5 mph or less)       0       Image: Specify:       % of Impact
3       3       Pass, one lane restriction - No Other Vehicle on Bridge       100       Image: Constraint of the constraint o
4       6       Pass, one lane and reduced speed (45 mph or less)       33       Image: Contraction of the contrection of the contraction of the contractio
5       5       Pass, crawl speed (5 mph or less)       0       Code to Return         6       7       Pass, one lane and crawl speed (5 mph or less)       0       Image: Code to Return         % of Impact
6 7 Pass, one lane and crawl speed (5 mph or less) 0 V % of Impact
Lane Restrictions

## STEP I – 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

A Precomputed Data		🕰 Analysis Progress	
Generate       Maintain         Analysis type:       Line Girder         Rating method:       LFD         Points of interest       Override bridge points of interest         Steel member       Generate at tenth points         Generate at section change points       Generate at user defined points	Concrete member Generate at tenth points except supports Generate at support points Generate at support face & critical shear points Generate at section change points Generate at user-defined points	<ul> <li>Analysis Event</li> <li>O440011</li> <li>STRUCTURES</li> <li>Sp. 1-5 [Sp 1-5 (5-Sp. Cont.) WF-x]</li> <li>GIRDER-SYSTEM MEMBERS</li> <li>1 - E Fascia {Existing Membe</li> <li>2 - 1st E Int {Existing Membe</li> <li>3 - 2nd E Int {Existing Memb</li> <li>4 - 3rd E Int-x [W24x62-Con</li> <li>5 - 3rd W Int [W24x62-Con</li> <li>6 - 2nd W Int {Existing Memb</li> </ul>	<ul> <li>Location - 154.1667 (ft)</li> <li>Location - 159.1667 (ft)</li> <li>Location - 159.5000 (ft)</li> <li>Location - 164.1667 (ft)</li> <li>Location - 169.1667 (ft)</li> <li>Location - 174.1667 (ft)</li> <li>Location - 179.1667 (ft)</li> <li>Location - 184.1667 (ft)</li> <li>Location - 189.1667 (ft)</li> <li>Location - 189.1667 (ft)</li> <li>Location - 194.1667 (ft)</li> <li>Location - 199.1667 (ft)</li> <li>Location - 199.1667 (ft)</li> <li>Location - 209.2709 (ft)</li> <li>Location - 209.3167 (ft)</li> <li>Location - 214.3917 (ft)</li> </ul>
Overwrite existing precomputed data Stop on first error Save as system d Generate Precom	efaults Generate puted Data Close	Finished processing 1 of 1 bridges:	<ul> <li>Location - 219.4667 (ft)</li> <li>Location - 224.5417 (ft)</li> <li>Location - 229.6167 (ft)</li> <li>Location - 239.7667 (ft)</li> <li>Location - 249.9167 (ft)</li> <li>Location - 249.9167 (ft)</li> <li>Completed Specification Check.</li> <li>Info - LFR analysis successfully completed!</li> <li>Info - Analysis completed!</li> <li>MK Cancel</li> </ul>

## STEP 2 – GENERATE PRECOMPUTED DATA

							×				
COV VICE ComputedDataRepository + {D29A4120-4157											
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>T</u> ools <u>H</u> elp											
Organize ▼ Include in library ▼ Share with ▼ Burn		New folder			:==		0				
🌗 AppData	*	Name	Date modified	Туре	Size						
		🧃 5739.bin	6/18/2019 11:21 AM	BIN File	17 KB						
Desktop		5740.bin	6/18/2019 11:22 AM	BIN File	321 KB		=				
Documents		🤳 5741.bin	6/18/2019 11:22 AM	BIN File	999 KB						
PrecomputedDataRepository		🧃 5742.bin	6/18/2019 11:22 AM	BIN File	577 KB						
		🧃 5743.bin	6/18/2019 11:22 AM	BIN File	1,591 KB						
Favorites		🧃 5745.bin	6/18/2019 11:23 AM	BIN File	92 KB						
Links		5746.bin	6/18/2019 11:24 AM	BIN File	388 KB						
Music	≡	🧃 5747.bin	6/18/2019 11:24 AM	BIN File	531 KB						
Pictures		5748.bin	6/18/2019 11:24 AM	<b>BIN File</b>	275 KB						
Saved Games		5749.bin	6/18/2019 11:25 AM	BIN File	41 KB						
Searches		5750.bin	6/18/2019 11:25 AM	<b>BIN File</b>	41 KB						
SoapUI-Tutorials		5751.bin	6/18/2019 11:25 AM	<b>BIN File</b>	552 KB						
Ji Videos		🧾 5753.bin	6/18/2019 11:26 AM	BIN File	368 KB						
Uefault	Ŧ	5754.bin	6/18/2019 11:26 AM	BIN File	524 KB		-				
40 items					p Compute	r					

## STEP 3 – ANALYZE PERMIT VEHICLE



## STEP 3 – ANALYZE PERMIT VEHICLE

Minimum Allowable Rating Factor	Load Rati Permit applic Application d <u>Requested by</u> Minimum allo	ng Tool ation numbe ate: : : wable rating	r. 7/20/2	1.00	~					
Select Permit Vehicle	Comment: Bridges Configu	Vehicles e analysis se	Rating results	1						
			Br	idge databa	ase		Has	Travel		
List of Bridges to	BID	Bridge ID	NBI structure	Route	Number of structures	Completely defined	precomputed data	direction		
he Analyzed	49	0840017	084-0017	10055	1		<b>v</b>	Both directions		
De Analyzed	59	0540042	054-0042	10055	2		V	Both directions *		
	60	0540043	054-0043	10055	1		V	Both directions *		Ū
	64	0540047	054-0047	10055	2		V	Both directions *	1	
	66	0540053	054-0053	10055	1		1	Both directions		
	68	0540055	054-0055	10055	1		V	Both directions	6	
	74	0540057	054-0057	10055	1		1	Both directions *		
	77	0540061	054-0061	10055	1		V	Both directions	8	
	78	0540063	054-0063	10055	1		V	Both directions		
	80	0540065	054-0065	10055	1		V	Both directions		
	90	0570155	057-0155	10055	2		V	Both directions *		
	93	0570007	057-0007	10055	1		V	Both directions		
				40000		Desire -	17.8	6 11 11 11 11		
	102	0570016	057-0016	10055	1		V	Both directions		

## STEP 3 – ANALYZE PERMIT VEHICLE

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0	nfigur	ratio	on								Factor		
21111	nem.							_ /					
Brid	dges Veł	nicles	Rating resu	ults				/_					
ilte	er results:	🖊 Pass	🗸 Fail 🔽	Exception	ns								
							u	D	LRFR				
	Vehicle	BID	Bridge ID	Route numbe	Code	Description	Inventory rating factor	Operating rating factor	Permit ating factor	Controlling impact	Pass conditions	Analysis warnings	
Þ	permit	49	0840017	10055	1	Denied		0.924		1.000			Γ
	permit	49	0840017	10055	4	Pass, with reduced spe		1.062		0.330			
	permit	59	0540042	10055	2	Pass, with no restrictions		1.104		1.000			
	permit	60	0540043	10055	1	Denied		0.704		1.000			1
	permit	60	0540043	10055	1	Denied		0.817		0.330			Ľ.
	permit	60	0540043	10055	1	Denied		0.896		1.000			
	permit	60	0540043	10055	6	Pass, with one lane an		1.040		0.330			1
	permit	64	0540047	10055	2	Pass, with no restrictions		1.371		1.000			Ľ.
_	permit	66	0540053	10055	2	Pass, with no restrictions		1.131		1.000			
	permit	68	0540055	10055	2	Pass, with no restrictions		1.025		1.000			
	permit	74	0540057	10055	2	Pass, with no restrictions		1.853		1.000			
	permit	77	0540061	10055	2	Pass, with no restrictions		1.556		1.000			
	permit	78	0540063	10055	2	Pass, with no restrictions		1.188		1.000			
	normit	80	0540065	10055	2	Pass with no restrictions		1 586		1 000			

#### BrDR – API EXAMPLES

- C:\Program Files\AASHTOWare\BrDR73\API Examples
- 3 References and 2 Guides
- I9 Code Examples

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📒 Example2-4	5/31/2024 11:51 AM	File folder
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Example3-1	5/31/2024 11:51 AM	File folder
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Example3-3	5/31/2024 11:51 AM	File folder
📲 ApiExamples.sln	9/27/2022 1:56 PM	Visual Studio Solution
ReadMe.txt	9/27/2022 1:56 PM	Text Document

## BrDR – API EXAMPLES

## I9 Examples

1 Basic API Operations	2 Analysis Examples
1.1 Object retrieve examples 1.2 Object CRUD examples 1.3 Summary object examples 1.4 Retrieving reinforced concrete cross sections 1.5 Retrieving prestressed beam spans	<pre>2.1 Analysis API 2.2 Simplified Analysis API (LFD) 2.3 XML-based Analysis API 2.4 Rating Tool API ← 2.5 Simplified Analysis API (LRFR)</pre>
1.6 C++ Object retrieve example (a subset of Example 1.1) [Not in solution] 1.7 Calculating Steel Cross-Sectional Area 1.8 Create and save bridge example	3 Engine
<pre>1.9 Import Utility example 1.10 Licensing example 1.11 IFC bridge import/export example</pre>	<ul><li>3.1 Creating a 3rd-party engine</li><li>3.2 Creating a 3rd-party engine properties UI window</li><li>3.3 Retrieve Engine Properties from Bridge Object</li></ul>

#### RATING TOOL - API EXAMPLE

- Example 2-4
- .NET Framework 4.8
- C#
- Default Scenarios
- Type 3 and EV2 Vehicles
- Set-up to work with Default Bridge Models

🐧 File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help 🔎 Search - ApiExamples		88 – 🗆 🗙
⑥ ・ ○ 部・ ※ 四 回 ジ ・ ○ ・ ○ Debug ・ Anv CPU ・ Example 1-1 ・ ▶ Start ・ ▷ ・ / ・ □ □ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □ ○ □		이 귀
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P	rogram.cs 🛎 🗙 🗸 🌣	Solution Explorer 🛛 🔫 🕂 🗙
Example2-4 → 🗞 Example2_4.Program → ୲ୠଧani(string[] args)	<b>-</b> ‡	"∄ ไ⊙·≒♡⊟@ "
75 rtApiScenarioThree.PassCondition = "10 - Truck speed restriction to 5 mph; \n 11	- Bridge res 📤	Search Solution Explorer (Ctrl 🔎 -
76 rtApiScenarioThree.PercentImpact = 0.0;		Solution 'ApiExamples' (18 of 1
77 rtApiScenarioThree.OneLaneRestrictionInd = true;		Solution Items
78 <b>rtApiEvent</b> .ScenarioList.Add(3, rtApiScenariolhree);		Example1-1
80 // Define primary vehicles first		Example1-10
81 RtApiVehicle rtApiVehiclePrimary = new RtApiVehicle();		Emple1-11     Emple1-2
82		Example1-3
83 rtApiVehiclePrimary.Name = "lype 3"; wtApiVehiclePrimary.Name = "lipeBring over a lipeBring over a lipeBring over a lipeBrown and li	i+"• // Thi	▶ 💷 Example1-4
85 rtApiVeniclePrimary.Impact = 1.0;	it, // III	Example1-5
86		Example1-7
87 // Create Vehicle Axles		P I Example - 8
88 RtApiVehicleAxle rtApiVehicleAxleOne = new RtApiVehicleAxle();		C= Example1-9
99 rtApivencteactedne.actemender - 1, 90 rtApivencteactedne.acteloadKip = 16.0:		▷ Œ Example2-2
91 rtApiVehicleAxleOne.WheelContactWidthIn = 14.1422;		▷ I Example2-3
92 rtApiVehicleAxleOne.AxleSpacingMinFt = 0.0;		▲ 💷 Example2-4
93 rtApiVehicleAxLeOne.AxLeSpacingMaxFt = 0.0;		Properties
94 FLADIVENICLEPTIMATY.AXTELIST.Add(1, FLADIVENICLEAXTEONE);		▷ Arp config
96 RtApiVehicleAxle rtApiVehicleAxleTwo = new RtApiVehicleAxle();		C# Program.cs
97 rtApiVehicleAxleTwo.AxleNumber = 2;		▷
98 rtApiVehicleAxleTwo.AxleLoadKip = 17.0;		▶ 🖙 Example3-1
99 <b>rtApiyencteAxtermo.WheelContactWindthin</b> = $14.5775$ ; 100 <b>rtApiyencteAxtermo.WheelContactWindthin</b> = $16.5775$ ;		Example3-2
100 rtApiVehicleAxleTwo.AxleSpacingMaxFt = 15.0;		Example3-3
<pre>102 rtApiVehiclePrimary.AxleList.Add(2, rtApiVehicleAxleTwo);</pre>		
103		Solution Explorer Git Changes
104 RtApivehicLeAxLe rtApivehicLeAxLeInree = new RtApivehicLeAxLe();		
105 rtApiVehicleAxLeThree.AxLeLoadKip = 17.0;		Properties • • • ×
107 rtApiVehicleAxleThree.WheelContactWidthIn = 14.5775;		
108 rtApiVehicleAxleThree.AxleSpacingMinFt = 4.0;		
109 rtApiVehicleAxLeThree.AxLeSpacingMaxFt = 4.0;		
110 FADIVENICCEPTIMATY.AXTELISC.Add(5, FADIVENICCEAXTEINFEE);		
112 //Define primary vehicle frequency, loading condition, overriden factor for LRFR		
106% - 🗞 🔊 🖉 No issues found 🔰 🥳 🔸 👘 👘 🕹 Ln: 45 0	Ch: 102 SPC CRLF	
Output	- <b></b>	
Show output from: GitHub Copilot 🔹 🔛 🖆 🖄 🕲		
GitHub Copilot 1.147.0.0 (v1.147.0.0@218a5ecac)		
GITHUD COPILOT Agent 1.14/.0 (1.14/.0) [DEBUG] Fagent] [2024-07-20720:27:42.6652] Agent service starting		
[DEBUG] [agent] [2024-07-20T20:27:42.707Z] Telemetry initialized		
Auth Status: NotSignedin		
Error List Output		
Paula & .	dd to Source Control	Select Panaritan
, ready (7 A	au to source Control A	

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#### RATING TOOL - API EXAMPLE

## Before Running

- Create Precomputed Data files for
  - Must uncheck "Template" toggle in model
  - TrainingBridgel
  - Example7
  - RCTrainingBridge1

#### Change Repository Path in Code

TrainingBridge1	Template	etely defined	Superstructur Culverts Substructures
al reference point Traffic	Custom agency field	ds	
	Year built:	1999	]
	Length:	161.000656	ft
	Route number:	0051	]
	Mi, post:	17	]



#### RATING TOOL - API EXAMPLE

#### Run API



- Modify Example
- .NET Framework 4.8
- C#
- Custom Scenarios
- Custom Vehicle
- Custom List of Bridges

📢 File	Edit Viev	w Git Project Build Debug Test Analyze Tools Extensions Window Help 🔎 Search - ApiExamples		🔞 – 🗆 X
	) 🖥 - 🚅	💾 🗐   🏷 - 🖓 -   Debug 🔹 Any CPU 🔹 Example2-4-1 🔹 🕨 Start - 🕨 🕤 -   📪   👼 🛫 🍗 G	16   19 %   🗖 🕇	지 귀 🖓 🖕 🖆 🐼 🛛 ADMIN
Dat Prog	ram.cs + X		- ¢	Solution Explorer 🔻 👎 🗙
S 🖬 P	ample2-4-1	- 🏀 Example2_4_1.Program - 🗞 Main(string[] args)	- ‡	
urce	112	rtApiscenariosix.come = "/"; ntApiscenariosix Description = "Dass one lane and enawl speed (5 mph on lass)";		Search Solution Explorer (Ctrl+:)
~	115	rthpiscenariosis passcription - Pass, one tane and trawt speed (5 mph or tess),		Solution 'AniExamples' (19 of 19
	115	rtApiScenarioSix.PercentImpact = 0.00;		Solution Items
	116	<pre>rtApiScenarioSix.OneLaneRestrictionInd = true;</pre>		D C# Example1-1
		rtApiEvent.ScenarioList.Add(6, rtApiScenarioSix);		▷ I Example1-10
		3		▷ CIII Example1-11
	119			▷ 🖽 Example1-2
	120			▷ CIII Example1-3
	121	// Define Primary Vehicle		▷ C# Example1-4
	122			Example1-5
	124	RtApiVehicle rtApiVehiclePrimary = new RtApiVehicle();		Emergence Example1-7
		rtApiVehiclePrimary.Name = "permit1 313,500 16 axles";		▶ ⊡ Example1-8
		<pre>rtApiVehiclePrimary.ControllingRatingLevel = "LFROperating"; // This needs to</pre>	be one or I 📍	P C# Example1-9
	127	rtApiVehiclePrimary.Impact = 1.0;		Example2-1
	128			b Cill Example2-3
	129	// Kead CSV file	tTruck csv	Example2-4
	130	var reader - new Streamreader (C. (1202) Adoug Presentation (permit2) (Permit	CTFUCK.CSV	▲ C# Example2-4-1
	132	<pre>var records = csv.GetRecords<dynamic>();</dynamic></pre>		Properties
				▷ #6 References
				App.config
		RtApiVehicleAxle rtApiVehicleAxle = new RtApiVehicleAxle();		packages.config
	136	int Counter = 0;		C# Program.cs
	137	<pre> foreach (var r in records)  f </pre>		Example2-5
	130	//Console Writeline(\$"&r AvleNumber -15%r AvleLoadVin -10%r WheelContactWi	dthTn 1538	▷ Em Example3-1
	140	Counter++:		▷ E# Example3-2
	141			P C# Example3-3
	142	<pre>if (Counter != 1) rtApiVehicleAxle = new RtApiVehicleAxle();</pre>		Solution Explorer Git Changes
	143	rtAniVabicleAvle AvleNumber = int Parse(r AvleNumber): // need to convert s	tring to i	Properties
	145	rtApiVehicleAxle, AxleloadKip = Convert, ToDouble(r, AxleloadKip):	cring co in	Example 1-1 Project Properties
	146	rtApiVehicleAxle.WheelContactWidthIn = Convert.ToDouble(r.WheelContactWidthI	n);	
		rtApiVehicleAxle.AxleSpacingMinFt = Convert.ToDouble(r.AxleSpacingMinFt);		🔠 💱 🎤
		<pre>rtApiVehicleAxle.AxleSpacingMaxFt = Convert.ToDouble(r.AxleSpacingMaxFt);</pre>		Misc
	149	rtApiVehiclePrimary.AxleList.Add(rtApiVehicleAxle.AxleNumber, rtApiVehicleAx	le);	Project File Example1-1.csproj
	150			Project Folder C:\rvb\VisualStudio\F
106.9	- <b>8</b> 9 @	Ø No issues found Ø ▼	17 SPC CRLF	
Oute	ut		+ ų ×	
Shou	woutput from:	GitHub Conilat		
Git	Hub Copilot	: 1.147.0.0 (v1.147.0.00218a5ecac)		
Git	Hub Copilot	Agent 1.147.0 (1.147.0)		
	BUG] [agent BUG] [agent	;] [2024-0/-2/11:10:0/.1482] Agent service starting ] [2024-0/-2/11:10:07.210] Telemetry initialized		
Aut	h Status: N	lotSignedIn		
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# Create a New Project

I.Right click on Solution >> Add >> New Project...

2.Console App (.NET Framework 4.8)

3.Use Unique Project Name

Console App (INET Trainework) Car mindous console			
Project name			
Example2-4-4.v7.3			
Location			
C:\rvb\VisualStudio\BrDR73\API Examples\Examples_rvb			
Framework			
.NET Framework 4.8			
Project will be created in "C:\rvb\VisualStudio\BrDR73\API Examples\Examples_rvb\Exan	nple2-4-4.v7.3\"		
Project will be created in "C:\rvb\VisualStudio\BrDR73\API Examples\Examples_rvb\Exan	nple2-4-4.v7.3\"		
Project will be created in "C:\rvb\VisualStudio\BrDR73\API Examples\Examples_rvb\Exan	nple2-4-4.v7.3\"		

reate

- 4. Right click on the new Project and >>Unload Project
- 5. Copy AASHTO.BrDR References
- 6. Right click on the new Project and >>Reload Project
- 7. Copy code from example

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% × 188 😋 No issues found	(Name)	Example2-4-1.simple.v7.3
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	Example2-4-1.simple.v	7.3 Unloaded Project Propertiv +
	Properties	- 4 ×
	Solution Explorer Git C	hanges
	▶ C# Example3-3	×
	▶ 🖙 Example3-2	
<import project="\$(MSBuildToolsPath)\Microsoft.CSharp.targets"></import>	▷ C# Example3-1	
	▷ 🖙 Example2-5	
<none include="App.config"></none>	C# Program.cs	
	a packages.co	onfig
<pre><compile include="Properties\AssemblyInfo.cs"></compile></pre>	App.config	
<pre><compile include="Program.cs"></compile></pre>	V ≠ Properties ≥ & References	
<td>Example2-4-3</td> <td>CSVIIIe.V1.3</td>	Example2-4-3	CSVIIIe.V1.3
<reference include="System.Xml"></reference>	C# Program.cs	coufile v7 2
<pre><reference include="System.Net.Http"></reference></pre>	a packages.co	onfig
<pre><reference include="System.Data"></reference></pre>	م App.config	e
<pre><reference include="System.Data.DataSetExtensions"></reference> <reference include="Microsoft CSharp"></reference></pre>	▷ ♣₽ References	
<pre><reference include="System.Xml.Ling"></reference> </pre>	Properties	
<reference include="System.Core"></reference>	▲ 💷 Example2-4-2.0	custom.v7.3
The reaction and the system of	🕞 Example2-4-1.s	simple.v7.3 (unloaded)
<pre><reference aashto.brdr.svs.="" culture="neutral," include="AASHTO.BDR.AnalyticalTools.RatingTool, version=7.3.0.3001,&lt;br&gt;&lt;Reference Include=" pre="" publi<="" version="7.3.0.3001,"></reference></pre>	▷	3
CharGenergy Teoludo-WAACUTO DepD Applytics]Teols DetingTeol Version-7 2 0 2001	♦ 🖙 Example2-3	
<td>▷ C# Example2-2</td> <td></td>	▷ C# Example2-2	

Customize
 Scenarios
 to match
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Program.cs 7 X Program.cs			÷ \$	Solution Explorer	<b>-</b> म × ឆ្នី
္ထိ 🖼 Example2-4-1	→ <sup>A</sup> <sup>®</sup> Example2_4_1.Program	<ul> <li></li></ul>	- ‡		s 🖌 " 🛐
51				Search Solution Explorer (Ctrl+:)	ρ, ti
۳ <u>5</u> 2	// Define scenarios				
53 🗸			· · · · · ·	V Example1-4	
54	RtApiScenario rtApiScenarioOne = new RtAp	piScenario();		N GH Example 1.5	
55	rtApiScenarioOne.ProcessOrder = 1;			Emergence 1 7	
56	rtApiScenarioOne.Code = "2";			P C# Example1-7	
57	rtApiScenarioOne.Description = "Pass, no	restrictions";		P CIII Example 1-8	
58	rtApiScenarioOne.PassCondition = string.E	_mpty;	IR	▶ ﷺ Example1-9	
59	rtApiScenarioOne.PercentImpact = 1.00;		IR	P C# Example2-1	
60	rtApiScenarioOne.OneLaneRestrictionInd =	false;		▶ C# Example2-2	
61	rtApiEvent.ScenarioList.Add(1, rtApiScena	arioUne);		▶ C# Example2-3	
62				▷ C# Example2-4	
63	RtApiScenario rtApiScenarioTwo = new RtAp	piScenario();		▲ 🖙 Example2-4-1	
64	rtApiScenarioTwo.ProcessOrder = 2;			👂 🖋 Properties	
65	rtApiScenarioTwo.Code = "4";		11	▷ # References	
66	rtApiScenarioTwo.Description = "Pass, red	duced speed (45 mph or less)";		App.config	
67	rtApiScenarioTwo.PassCondition = string.E	Empty;		C# Program.cs	
68	rtApiScenarioTwo.PercentImpact = 0.33;			rvb 2-4-1 readme.tx	dt 🛛
69	rtApiScenarioTwo.OneLaneRestrictionInd =	false;		▲ C# Example2-4-2	
70	rtApiEvent.ScenarioList.Add(2, rtApiScena	arioTwo);		Properties	
71				≥ & References	
72	RtApiScenario rtApiScenarioThree = new Rt	tApiScenario();			
73	rtApiScenarioThree.ProcessOrder = 3;				
74	rtApiScenarioThree.Code = "3";			C# Deckages.coming	
75	rtApiScenarioThree.Description = "Pass, o	one lane restriction - No Other Vehicle on	Bridge";	C+ Program.cs	
76	rtApiScenarioThree.PassCondition = string	j.Empty;		P C Example2-5	
77	rtApiScenarioThree.PercentImpact = 1.00;			P C# Example3-1	
78	rtApiScenarioThree.OneLaneRestrictionInd	= true;		▶ C# Example3-2	
79	rtApiEvent.ScenarioList.Add(3, rtApiScena	ariolhree);		▷ C# Example3-3	
80 81	RtApiScenario <b>rtApiScenarioFour</b> = <u>n</u> ew RtA	ApiScenario();	•	Solution Explorer Git Changes	

Custom Permit Vehicle

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Example2-4-1	<ul> <li></li></ul>	<b>-</b> ‡	♬ <sup>™</sup> @ + ≒ ♡ ⊟ @   ^> ≁ "
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238 239 240 241 242 243 243 244 245	RtApiVehicleAxle rtApiVehicleAxleSixteen = new RtApiVehicleAxle(); rtApiVehicleAxleSixteen.AxleNumber = 16; rtApiVehicleAxleSixteen.AxleLoadKip = 19.7; rtApiVehicleAxleSixteen.WheelContactWidthIn = 20; rtApiVehicleAxleSixteen.AxleSpacingMinFt = 5; rtApiVehicleAxleSixteen.AxleSpacingMaxFt = rtApiVehicleAxleSixteen.AxleSpacingMinFt; rtApiVehiclePrimary.AxleList.Add(16, rtApiVehicleAxleSixteen);		Properties • 4 × •
246 🚺 6% - 🗞	ssues found 🔰 💞 🔹 4 👘 🕨 Ln: 160 Ch: 4	48 SPC CRLF	

- Custom List of Bridges
- 84 Bridges
- **8,916** PCDF's
  - 6.3 GB
- 42 seconds if Mapping 'Bridge ID' to 'BID'
- 2 seconds if Directly Loaded by File Name

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	Debug 🔹 Any CPU 🔹 Example2-4-1 🔹 🕨 Start 🔹 D 🕥 🐨 📾 🛱 📮 🕸 🔚 🎁 🛅 🖓 🖓 🖓 📮	ピ 矛 ADMIN
		- ☆ Solution Explorer - 구 × 品
	• 🍄 Example2_4_1.Program • 🗣 🖓 Main(string[] args) •	÷ 🗿 To • 与 🔿 🗇 🖓 👘 👘
		▲ Search Solution Explorer (Ctrl+·)
11	Specify bridges	
11	Note: you can either directly load a bridge by filepath or use the Repository Summary helper as an index to deter In this example, we look up 3 bridges to determine the filepath.	2 ▷ @ Example1-3 ▷ @ Example1-4 ▷ @ Example1-5
//	Load the bridge data from the summary helper	r ▷ Œ Example1-7
IE	numerable <ktkepositorybridgedata> repositoryBridgeDataEnumerable = ktkepositorySummary.Loadkepository(rtApievent.F</ktkepositorybridgedata>	■ ▷ Œ Example1-8
//	Create a map to map BridgeId to BridgeData	b (# Example2-1
fo	reach (RtRepositoryBridgeData rtRepositoryBridgeData in repositoryBridgeDataEnumerable)	► Example2-2
-{		▶ 🖙 Example2-3
}	bridgeDataMap.Add(rtRepositoryBridgeData.BridgeId.ToLower(), rtRepositoryBridgeData);	▷ I Example2-4 ▲ I Example2-4-1 ▶ Properties
		▶ &⊕ References
	Create first bridge item	App.config
	ring sBridgeIdOne = "0320086"; //3315	C# Program.cs
Rt	RepositoryBridgeData rtBridgeDataOne = bridgeDataMap[sBridgeIdOne.ToLower()];	rvb_2-4-1_readme.txt
Rt if	DoRatingToolDomain rtDoRatingToolDomainOne = new RtDoRatingToolDomain(); (rtDoRatingToolDomainOne.LoadBinary(Path.Combine(rtApiEvent.RepositoryPath, rtBridgeDataOne.PrecomputedDataFileNa	
{		P References
	// if LoadBinary succeeds, add to the bridge item list	App.config
	KtApibridgeltem rtApibridgeltemune = new KtApibridgeltem();	packages.config
	rthoisride Itemone. Travel Direction = Rthoi Travel Direction. Both:	C# Program.cs
	rtApiEvent.BridgeItemList.Add(rtApiBridgeItemOne);	▶ 🖙 Example2-5
}		▶ 🖙 Example3-1
		▶ ﷺ Example3-2
	Consta part bridge iten	₽ 💷 Example3-3
// c+	Create next Origin (1987)	Solution Explorer Git Changes
Rt	RepositoryBridgeData rtBridgeDataMap[sBridgeDataMap[sBridgeIdTwo.ToLower()]:	Properties - I X
Rt	DoRatingToolDomain rtDoRatingToolDomainTwo = new RtDoRatingToolDomain();	
if	<pre>(rtDoRatingToolDomainTwo.LoadBinary(Path.Combine(rtApiEvent.RepositoryPath, rtBridgeDataTwo.PrecomputedDataFileNe</pre>	
{		
	// if Loadbinary Succeeds, add to the bridge item list Rthoismidealtem rthoismidealtem was a new Rthoismidealtem().	
	rtholibridgeltem Wo, Domain = rtbORatingToolDomainTwo:	
	rtApiBridgeItemTwo.TravelDirection = RtApiTravelDirection.Both; rtApiEvent.BridgeItemList.Add(rtApiBridgeItemTwo);	
}		-
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## THE END

