

AASHTOWare BrDR 7.5.0

Report Tutorial

RPT2 – Report Tool with XSL Formatting

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Topics Covered

- Overview of BrDR Report Tool.
- What is XML?
- What is XSL?

Overview of BrDR Report Tool

The **BrDR** Report Tool has the capability to create 3 types of summary reports:

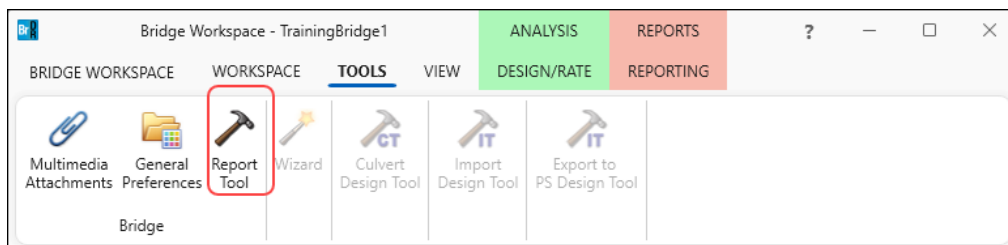
1. Bridge Explorer report - Information representing the bridges in the BrDR database.
2. Bridge Workspace report - Input data representing a bridge.
3. LFR, LRFR, and LRFD Analysis Output - Output data representing the current analysis event.

The **Report Tool** generates an XML file in the **Reports** folder, which is located in the **AASHTOWare** folder, for each type of report that it creates. For **Bridge Explorer** and **Bridge Workspace** reports, the filenames correspond to the names of the report definition files (.XML) that were used to create the reports. For an LFR Analysis Output report, the files *LFRReport.XML* and *LFRReport.XSL* are created. Likewise, for an LRFD Analysis Output report, the files *LRFDRReport.XML* and *LRFDRReport.XSL* are created.

The XML file contains the report data and the accompanying XSL file contains formatting instructions to display the report data. If the XML file is saved to a folder other than the **Reports** folder, the XSL file must be manually copied to that folder. The name of the XSL file should not be changed from what was originally generated by the **Report Tool** since the name of the XSL file is referenced inside of the XML file.

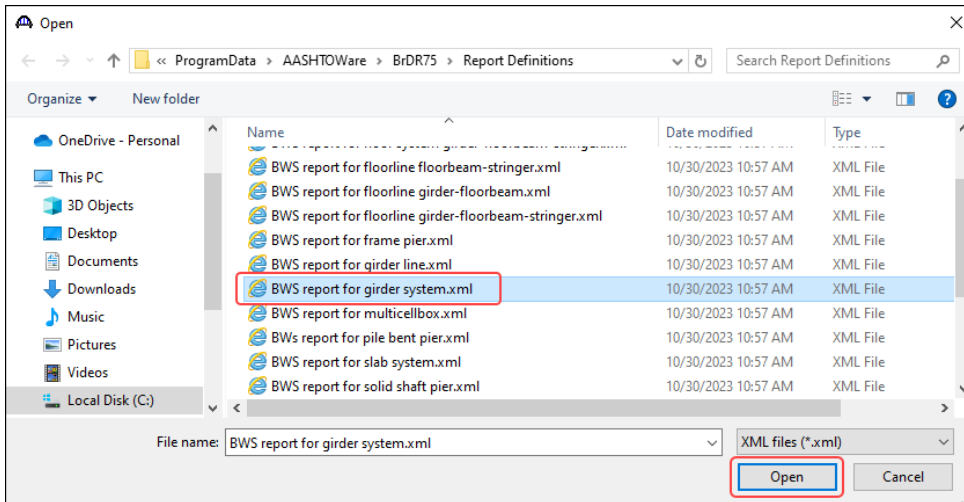
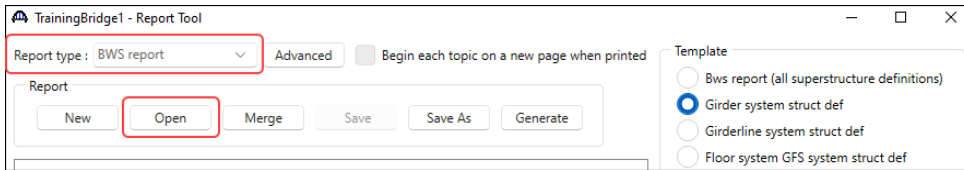
The *BWS Report for girder system.xml* shown below was generated by the steps below:

1. Start BrDR version 7.5.0 from the Start Menu.
2. Open **TrainingBridge1** from the **Bridge Explorer**.
3. Rate **TrainingBridge1** with the **HS 20 LFR Rating** template.
4. Open the **Report Tool** by clicking on the Report Tool button from the TOOLS ribbon



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- With **BWS report** selected as the **Report Type**, click on the **Open** button, and select **BWS Report for girder system.xml** report type as shown below.



- Click on the **Generate** button to generate and display the report. The generated report is shown below.

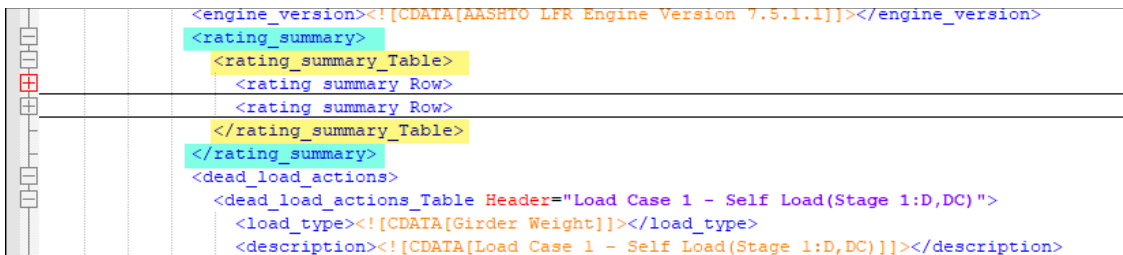
The screenshot shows the generated report for 'GirderSystemTemplate'. The report is titled 'Bridge' and contains the following information:

Name	Training Bridge 1(LRFD)
Description	
Creation Timestamp	
Last Modified Timestamp	Monday, October 12, 2009
Elevation	
X plane coordinate	0.00 ft
Y plane coordinate	0.00 ft
Recent ADTT Year	
Recent ADTT	
Previous ADTT Growth Rate	
Traffic Factor	
LRFD Constant Impact Factor	33.0 %
LRFD Fatigue Impact Factor	15.0 %
Impact Factor Adjustment	
Impact Factor Override	%
Impact Factor Type	Standard - AASHTO
Template Indicator	false
Bridge Completely Defined Indicator	true
LRFD Multiple Presence Factors Reduce Based On ADTT Indicator	false
ADT	
Directional PCT	%
Design ADTT	2500
Custom agency field one	
Custom agency field two	
Custom agency field three	
Custom agency field four	
Custom agency field five	
Custom agency field six	
Custom agency field seven	
Custom agency field eight	
Custom agency field nine	
Custom agency field ten	
Fatigue importance factor	Main Arterial, Interstate, Other

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What is XML?

- Extensible Markup Language (XML) is a subset of Standard General Markup Language (SGML) for data storage.
- SGML is an international standard (ISO 8879) for the definition of device-independent and system-independent methods for information representation in electronic form.
- The XML document does not contain information for data presentation.
- XML syntax: (See below for partial content of the *BWS Report for girder system.xml* document)
- All XML documents should have a root node.
 - The `<report_tool>` tag is the root node of the document.
- All XML tags should be closed.
 - The `</report_tool>` tag closes the `<report_tool>` tag.
- All XML tags should be properly nested.
 - The start `<rating_summary_Table>` and end `</rating_summary_Table>` tags are nested inside the start `<rating_summary>` and end `</rating_summary>` tags.



```
<engine_version><![CDATA[AASHTO LFR Engine Version 7.5.1.1]]></engine_version>
<rating_summary>
  <rating_summary_Table>
    <rating_summary_Row>
    <rating_summary_Row>
  </rating_summary_Table>
</rating_summary>
<dead_load_actions>
  <dead_load_actions_Table Header="Load Case 1 - Self Load(Stage 1:D,DC)">
    <load_type><![CDATA[Girder Weight]]></load_type>
    <description><![CDATA[Load Case 1 - Self Load(Stage 1:D,DC)]]></description>
```

- All XML tags are case-sensitive.
- No XML tags may contain spaces in the name.
- Partial content of the *BWS Report for girder system.xml* is shown below.

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```
<?xml version="1.0" encoding="utf-8"?>
<?xml-stylesheet type="text/xsl" href="GirderSystemTemplate.xsl"?>
<report_tool>
  <bridge>
    <name><![CDATA[Training Bridge 1(LRFD)]]></name>
    <description />
    <creation_modified_time_stamp />
    <last_modified_time_stamp><![CDATA[Monday, October 12, 2009]]></last_modified_time_stamp>
    <elevation units="ft" />
    <x_plane_coordinate units="ft"><![CDATA[0.00]]></x_plane_coordinate>
    <y_plane_coordinate units="ft"><![CDATA[0.00]]></y_plane_coordinate>
    <recent_count_year />
    <recent_count_adtt />
    <previous_growth_rate />
    <traffic_factor />
    <lrfd_constant_impact_factor units="%"><![CDATA[33.0]]></lrfd_constant_impact_factor>
    <lrfd_fatigue_impact_factor units="%"><![CDATA[15.0]]></lrfd_fatigue_impact_factor>
    <impact_factor_adjustment />
    <impact_factor_override units="%" />
    <impact_factor_type><![CDATA[Standard - AASHTO]]></impact_factor_type>
    <template_ind><![CDATA[false]]></template_ind>
    <completely_defined_ind><![CDATA[true]]></completely_defined_ind>
    <mpf_reduce_based_on_adtt_ind><![CDATA[false]]></mpf_reduce_based_on_adtt_ind>
    <traffic_adtt />
    <traffic_directional_percent units="%" />
    <traffic_design_adtt><![CDATA[2500]]></traffic_design_adtt>
    <custom_agency_field_one />
    <custom_agency_field_two />
    <custom_agency_field_three />
    <custom_agency_field_four />
    <custom_agency_field_five />
    <custom_agency_field_six />
    <custom_agency_field_seven />
    <custom_agency_field_eight />
    <custom_agency_field_nine />
    <custom_agency_field_ten />
    <fatigue_importance_factor_type><![CDATA[Main Arterial, Interstate, Other]]></fatigue_importance_factor_type>
    <override_importance_factor_ind><![CDATA[false]]></override_importance_factor_ind>
    <importance_factor_override />
    <expected_annual_adttsl_growth_rate />
    <initial_adttsl />
    <present_adttsl />
    <limit_adttsl />
    <current_bridge_alt_name><![CDATA[Single Span Bridge]]></current_bridge_alt_name>
    <existing_bridge_alt_name><![CDATA[Single Span Bridge]]></existing_bridge_alt_name>
    <featint><![CDATA[SR 6060]]></featint>
    <facility><![CDATA[SR 0051]]></facility>
    <location><![CDATA[Pittsburgh]]></location>
    <yearbuilt><![CDATA[1999]]></yearbuilt>
    <length units="ft"><![CDATA[161.00]]></length>
    <routenum><![CDATA[0051]]></routenum>
    <kmpost units="mi"><![CDATA[17.00]]></kmpost>
    <adtttotal />
    <truckpct />
  </bridge>
</report_tool>
```

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```

<bridge alt>
<materials>
<beam shapes>
<appurtenances>
<factors>
<superstructures_definitions>
  <girder_system_structure_def>
    <name><![CDATA[Simple Span Structure]]></name>
    <description />
    <d1_distribution2_type><![CDATA[Uniformly to All Girders]]></d1_distribution2_type>
    <d1_distribution1_type><![CDATA[Tributary Area]]></d1_distribution1_type>
    <modular_ratio_sustained_factor><![CDATA[3.000]]></modular_ratio_sustained_factor>
    <deck_crack_control_param_z units="kip/in"><![CDATA[130.000]]></deck_crack_control_param_z>
    <girder_spacing_display_type><![CDATA[Perpendicular]]></girder_spacing_display_type>
    <frame_struct_simple_def_ind><![CDATA[false]]></frame_struct_simple_def_ind>
    <truck_traffic_fraction_single_lane />
    <num_lanes_available_to_trucks />
    <override_truck_traffic_ind><![CDATA[false]]></override_truck_traffic_ind>
    <deck_exposure_factor />
    <dist_left_most_girder_to_struct_def_ref_line units="ft" />
    <nbi_struct_matl_type><![CDATA[Concrete]]></nbi_struct_matl_type>
    <nbi_struct_const_type><![CDATA[Slab]]></nbi_struct_const_type>
    <super_struct_service_life />
    <impact_factor_adjustment><![CDATA[0.000]]></impact_factor_adjustment>
    <impact_factor_override units="k"><![CDATA[0.0]]></impact_factor_override>
    <lrfd_constant_impact_factor units="k"><![CDATA[33.0]]></lrfd_constant_impact_factor>
    <lrfd_fatigue_impact_factor units="k"><![CDATA[15.0]]></lrfd_fatigue_impact_factor>
    <impact_factor_type><![CDATA[Standard - AASHTO]]></impact_factor_type>
    <average_humidity units="%" />
    <consider_slab_effthick_rat_ind><![CDATA[true]]></consider_slab_effthick_rat_ind>
    <consider_slab_effthick_des_ind><![CDATA[true]]></consider_slab_effthick_des_ind>
    <consider_wear_surface_rat_ind><![CDATA[true]]></consider_wear_surface_rat_ind>
    <consider_wear_surface_des_ind><![CDATA[true]]></consider_wear_surface_des_ind>
    <lrfd_model_noncomposite_ind><![CDATA[false]]></lrfd_model_noncomposite_ind>
    <lrfr_model_noncomposite_ind><![CDATA[false]]></lrfr_model_noncomposite_ind>
    <struct_def_units_type><![CDATA[US Customary]]></struct_def_units_type>
    <default_analysis_method_type><![CDATA[LFR]]></default_analysis_method_type>
    <number_of_girders><![CDATA[4]]></number_of_girders>
    <number_of_spans><![CDATA[1]]></number_of_spans>
    <modeling_type><![CDATA[Multi Girder System]]></modeling_type>
  <span lengths>
  <load case description>
  <structure framing plan details>
  <structure typical section>
  <transverse stiffeners- plate>
  <transverse stiffeners- plate>

```

```

  <span lengths>
  <load case description>
  <structure framing plan details>
  <structure typical section>
  <transverse stiffeners- plate>
  <transverse stiffeners- plate>
  <transverse stiffeners- plate>
  <bearing stiffeners- plate>
  <girder_member>
    <name><![CDATA[G1]]></name>
    <description />
    <creation_modified_time_stamp />
    <last_modified_time_stamp><![CDATA[Tuesday, October 23, 2001]]></last_modified_time_stamp>
    <pedestrian_live_load_force units="lb/ft" />
    <current_member_alt_name><![CDATA[Plate Girder]]></current_member_alt_name>
    <existing_member_alt_name><![CDATA[Plate Girder]]></existing_member_alt_name>
    <member loads>
    <supports>
    <member alt- steel plate i beam- schd>
  </girder_member>
  <girder member>
  <girder member>
  <girder member>
  </girder_system_structure_def>
</superstructures_definitions>
</bridge>
</report_tool>

```

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What is XSL?

Extensible Stylesheet Language (XSL) is a language for defining XML document transformation and presentation. XSL consists of XSL Transformations (XSLT), XML Path Language (XPath), and XSL Formatting Objects (XSL-FO). Separating the content (XML) and the styling information (XSL) allows customizing the same content just by using a different stylesheet.

The simplified figure below describes the relationship between XML, XSL, and the displayed form:

