

AASHTOWare BrDR 6.8

Report Tutorial

RPT2 – Report Tool with XSL Formatting

Topics Covered

Overview of BrDR Report Tool.

- What is XML?
- What is XSD?
- What is XSL?
- XSL formatting with Altova STYLEVISION Professional Edition version 2004 rel. 4.

Overview of BrDR Report Tool

BrDR Report Tool allows user to create 3 types of summary reports:

1. Bridge Explorer report - Information representing the bridges in the BRIDGEWare database.
2. Bridge Workspace report - Input data representing a bridge.
3. LFD, 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 AASHTO BRIDGEWare report definition files (.abr) that were used to create the reports. For LFD Analysis Output, *LFDReport.XML* and *LFDReport.XSL* are created. Likewise, for LRFD Analysis Output, *LRFDRReport.XML* and *LRFDRReport.XSL* are created.

The XML file contains the report data and the XSL file contains formatting instructions for Internet Explorer to display the report data. The XML file can be saved to a different folder and renamed by using the Save As command in Internet Explorer. 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. The name of the XSL file is referenced inside the XML file to retrieve formatting instructions.

The provided *BWS Report for steel girders.xml* and *BWS Report for steel girders.xsl* were generated by the steps below:

1. Start BrDR version 6.8.0 from the Start Menu.
2. Open TrainingBridge1 Bridge Workspace.
3. Rate TrainingBridge1 with the HS 20 Rating template.
4. Select Bridge | Report Tool... and open *BWS Report for steel girders.abr*.
5. Hit the Generate button to generate and display the report in Internet Explorer. The generated report is shown below.

RPT2 - Report Tool With XSL Formatting

Bridge Id:	TrainingBridge1
Structure Number:	TrainingBridge1
Name:	Training Bridge 1(LRFD)
Creation Timestamp:	
Last Modified Timestamp:	Monday, October 12, 2009 15:41:35
Description:	
Location:	Pittsburgh
Bridge Completely Defined Indicator:	TRUE
Template Indicator:	FALSE
Quality Carried:	SR 0051
Structure Intersected:	SR 6060
Year Built:	1999
System Of Units:	US Customary
Route Number:	0051
Length:	161.00 ft
Mile/Km Post:	17.00 mi
Percent ADTT:	
Structure:	11
County:	01
Number:	1
Container:	1
Administrative Area:	-2
Functional Highway System Indicator:	1
Functional Class:	-1
Bridge Alt Name - Existing:	Single Span Bridge
Bridge Alt Name - Current:	Single Span Bridge
Plane Coordinate:	0.000 ft
Plane Coordinate:	0.000 ft
Elevation:	ft
Longitude:	Degrees
Latitude:	Degrees

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.
- XML document does not contain information for data presentation.
- XML syntax: (See below for partial content of the *BWS Report for steel girders.xml* document)
 1. All XML documents should have a root node.
 - The `<REPORT_TOOL>` tag is the root node of the document.
 2. All XML tags should be closed.
 - The `</REPORT_TOOL>` tag closes the `<REPORT_TOOL>` tag.
 3. All XML tags should be properly nested.
 - The start `<Rating_Summary_Gs_Ibs_Row>` and end `</Rating_Summary_Gs_Ibs_Row>` tags are nested inside the start `<Rating_Summary_Gs_Ibs>` and end `</Rating_Summary_Gs_Ibs>` tags.
 4. All XML tags are case-sensitive.
 5. No XML tags may contain spaces in the name.
- Partial content of the *BWS Report for steel girders.xml*:

```
<?xml version="1.0" standalone="no"?>
<?xml:stylesheet type="text/xsl" href="BWS Report for steel
girders.xsl" ?>

<REPORT_TOOL>
<Bridge_WorkSpace_Module>
<Bridge>
  <Bridge_Id><![CDATA[TrainingBridge1]]></Bridge_Id>
  <Structure_Number><![CDATA[TrainingBridge1]]></Structure_Number>
  <Name><![CDATA[Training Bridge 1 (LRFD)]]></Name>
  ...
  <Super_Structure_Definitions>
    <Girder_System_Structure_Def>
      ...
      <Girder_Member_Gs>
        ...
        <Member_Alt_Steel_Plate_I_Beam_Schd_Gs>
          ...
          <Analysis_Event_Gs_Ibs>
            ...
          ...
        ...
      ...
    ...
  ...

```

```

<Rating_Summary_Gs_Ibs>
...
  <Rating_Summary_Gs_Ibs_Row>
    <Vehicle><![CDATA[HS 20-44]]></Vehicle>
    <Vehicle_Type>Axle</Vehicle_Type>
    <Design_Method>LFD</Design_Method>
    <Rating_Status>Success</Rating_Status>
    <Inv_Capacity>52.62</Inv_Capacity>
    <Inv_Capacity_UNITS>Ton</Inv_Capacity_UNITS>
    <Opr_Capacity>87.87</Opr_Capacity>
    <Opr_Capacity_UNITS>Ton</Opr_Capacity_UNITS>
    <Inv_Rating_Factor>1.462</Inv_Rating_Factor>
    <Inv_Rating_Factor_UNITS> </Inv_Rating_Factor_UNITS>
    <Opr_Rating_Factor>2.441</Opr_Rating_Factor>
    <Opr_Rating_Factor_UNITS> </Opr_Rating_Factor_UNITS>
    <Inv_Location>80.50</Inv_Location>
    <Inv_Location_UNITS>ft</Inv_Location_UNITS>
    <Opr_Location>80.50</Opr_Location>
    <Opr_Location_UNITS>ft</Opr_Location_UNITS>
...
  </Rating_Summary_Gs_Ibs_Row>
</Rating_Summary_Gs_Ibs>
</Analysis_Event_Gs_Ibs>
</Member_Alt_Steel_Plate_I_Beam_Schd_Gs>
</Girder_Member_Gs>
</Girder_System_Structure_Def>
</Super_Structure_Definitions>
</Bridge>
</Bridge_WorkSpace_Module>
</REPORT_TOOL>

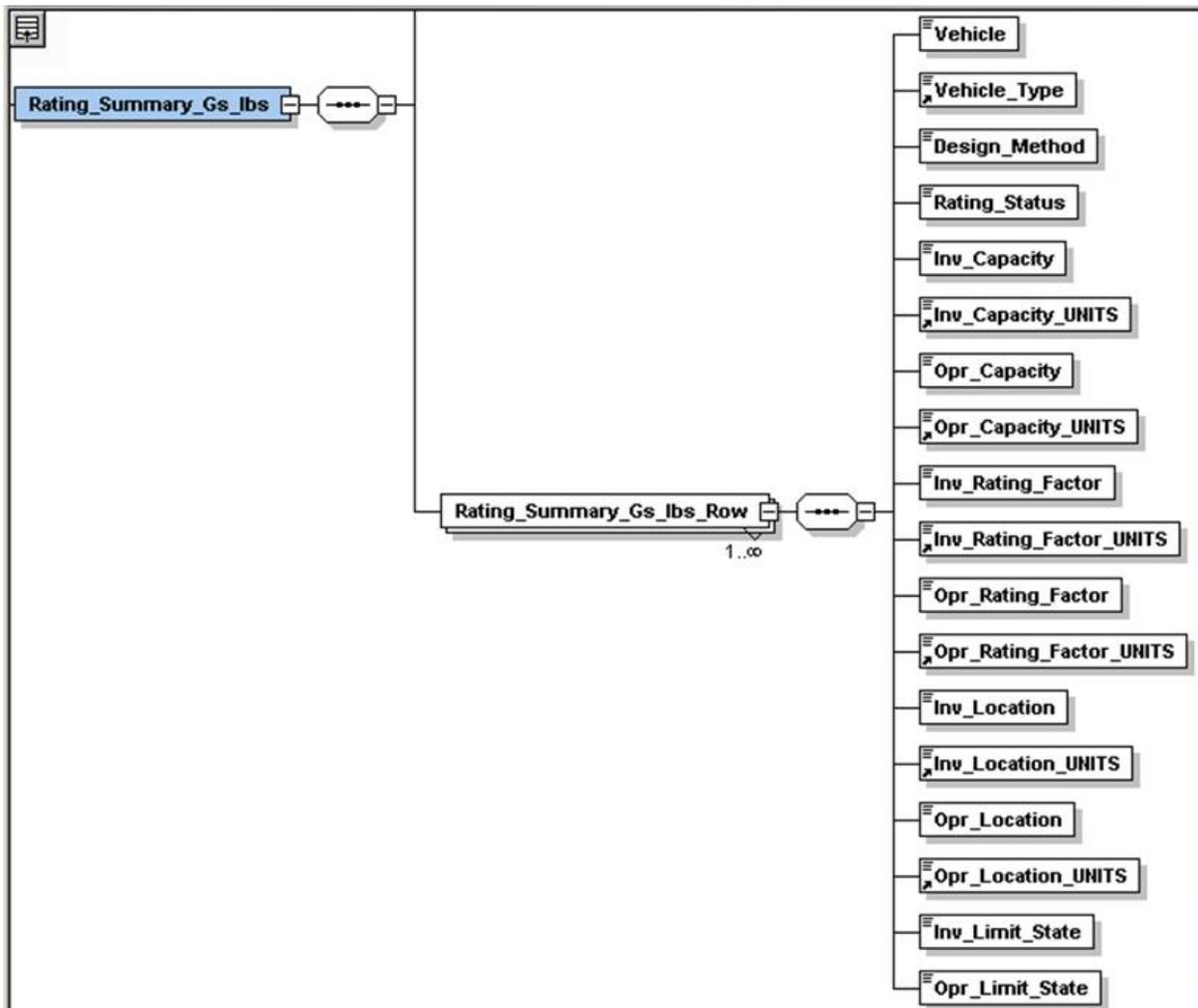
```

What is XSD?

XML Schema Definition (XSD) provides the syntax to describe the structure and validate the data in an XML document.

The provided *TrainingBridge1.xsd* was generated from the *BWS Report for steel girders.xml* using Altova XMLSPY Enterprise Edition version 2004 rel. 4.

Partial content model of the *TrainingBridge1.xsd*:



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.

Relationship between XML, XSL, and the displayed form:

