

Customizing XSLs for XML Reporting

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What Reports are available in InRoads?

- Reporting can be accomplished in several ways:
 - Review type reports
 - Presentation / formatting controlled by the product
 - XML / XSL reports
 - Presentation / formatting controlled by the user (as defined in a style sheet / XSL file)
 - InRoads produces the XML data
 - InRoads *Report Browser* utilizes XSL to transform the XML data to text or HTML



Understanding XML

- Extensible Markup Language (XML) composed of tags and attributes and XML is used for data exchange
- <u>Extensible Stylesheet Language Transformation (XSLT)</u> Defines the presentation of an XML document
- XML must be well formed
- One root element with a unique name
- Elements are properly nested -- no overlap.
- Tags must be closed.
- XML is case sensitive
- All element attributes are enclosed in quotation marks



What Can Style sheets Accomplish?

- Transform XML into HTM, text or another XML.
- Filter and sort XML data.
- Address parts of an XML document.
- Format XML data based on the data value, like displaying negative numbers in red.



XSL Elements

- xsl:apply-templates
- xsl:attribute
- xsl:call-template
- xsl:choose
- xsl:comment
- xsl:copy
- xsl:copy-of
- xsl:element
- xsl:for-each



XSL Elements Continued

- xsl:if
- xsl:include
- xsl:otherwise
- xsl:output
- xsl:param
- xsl:sort
- xsl:stylesheet
- xsl:template
- xsl:text



InRoads XML Report Tool

- To Access select InRoads > Tools > XML Report
- The Report Tool Extracts an XML file from the InRoads binary data structures based on the criteria submitted.
- The XML file is temporary and written to the location of the systems TEMP variable
- Save any files to be reused to alternate location.



Report Browser

- Manage "default" report style sheet for each type of report
- Style sheet "Help" documents what is required to use a specific style sheet
- Manage formatting with *Tools>Format Options*
 - Decimal precision
 - Formatting
 - Stationing
 - Angles
 - Directions
 - Slopes
- Allows *multiple* looks at the same data



Report Browser

🚳 Bentley InRoads Report Browser -

D:\program files\Bentley\InRoads Group V

IntersectingAlignmentStations

LegalDescription

File Tools Help

Evaluation 🔁 Geometry - \Lambda Area.xsl \Lambda ControlLineData.xsl

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Geometry Report Types Available

- Geometry
- Station Base
- Station Offset
- Clearance
- Stakeout
- Legal Description
- Map Check

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- Intersecting Alignment Stations
- Point Validation



Geometry Report

					X X X X	Station	Elevation	Northing	Easting
				Element: L	inear				$\sim \sim$
					POB	6+50.00	628.140	392827.606	2055811.372
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☑ Include Vertical Event Points

☑ Include Horizontal Event Points

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Length:

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368.674

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Stop: 0+00.00

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Station and Offset

- Why two commands *Station Base* and *Station Offset*?
- What's the difference?
 - Primarily it has to do with whether you increment along the active alignment / feature or the selected alignments / features

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Station Base Report

- Increments along the *From* object
- Allows you to define station limits

Station Base Report				×				
 Station Base Report General Include Horizontal Alignments Features 	From Form Form Form Feature: From Baseline Design Double Tr	rack-100+00.0000	▼ + ▼ ▼ +	Tran	SVERSE Report Crea Time	Feature ated: 10/15/20	Report	
	Limits Station Start: 100+00.0000 Stop: 133+75.0000]		Rail Model Bradshaw	ing\railway. 10/15/2007 No	alg 11:23:38 AM ote: All units in ti	his report are in fe	et unless specified otherwise
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Station Offset Report

• Increments along the *Selected* object

Station Offset Report			_ 🗆 🗙
Station Offset Report General Include Horizontal Alignments Features	From Horizontal Alignment: Surface: Feature:	Baseline design Double Track-100+00.0000	
	Apply Prefer	rences	Help



Clearance Report

- Computes station and offset from actual data
 - Horizontal cardinal points
 - COGO points
 - Features

Clearance Report Clearance Report General Horizontal Alignments Cogo Points Features	From Horizontal Alignment: Surface: Feature:	Baseline Design Double Track-100+00.0000	- X + + +
	Include Horizontal Points On-Alignment Off-Alignment Event	Limits Station Start: 100+00.0000 Stop: 133+75.0000	+ +
	Apply Prefer	ences Close	Help



Stakeout Report

Stakeout Report				_				
 Stakeout Report 	From Horizontal Al C Occupied Po Backsight Po	ignment: Traverse bint:	3		₽			
	Include Horizon	tal Points It 🔲 Off-Al	ignment					
	✓ Interval: 50	0000			hte	rline Staked	ut Report	
	C Offset: 50	.0000	÷		R	eport Created: 10/ Time: 12:25pr	15/2007 m	
					il Mo adsh	deling\railway.alg aw 10/15/2007 12: Note: All uni	24:09 PM ts in this report are in	reet unless specified otherwise
	Apply	Preferences	Close	Help		\leftrightarrow		
		X	Offset From Centerline	BS	OC	FS Station	Angle Right	Distance
			0.000	trv102	trv101	100+00.00	325°25'42"	133.880
			0.000	trv102	trv101	102+00.00	359°20'37"	296.628
			0.000	trv102	trv101	103+50.00	6°20'19"	439.986
			0.000	trv101	trv102	111+75.00	194°34'32"	293.204
			/O.000		trv103	113+25.00	26°24'24"	270.616
			0.000	trv103	trv104	120+25.00	30°37'32"	218.664
			0.000	trv103	trv104	121+75.00	60°55'08"	87.178
			0.000	101 tw/101	tp/105	127+75.00	301°11'14"	
			0.000	110104	10100	X / Z : Z : Z : Z : Z : Z : Z : Z : Z : Z		114,603
			0.000	trv104	trv105	129+25.00	247°49'12"	114,603 186,858
			0.000	trv104 trv104 trv105	trv105 trv105	129+25.00 133+75.00	247°49'12" 32°23'50"	114.603 186.858 115.544





Legal Description Report

- Simple boundary
 - Includes typical distances, bearings and curve data
 - Includes areas
 - Includes closures
- Right-of-way takes & easements
 - Include references (i.e. station & offsets) to multiple alignments



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Legal Description Report

Legal Description Report		_ 🗆 X
Alignments Include: "take Selected: Name Style Parcel 101-Take property_line Parcel 102-Take property_line Parcel 103-Take property_line	Primary Reference Alignment Include Name: ASTH83_cl Bandwidth: 100.00 Secondary Reference Alignments Include: + Selected:	Apply Close Filter Preferences Help
Closed Alignments Only		
Include Block Parent Alignment Name: Parcel 103		

Alignment Description:

Beginning at a point 16.129 feet left of ASTH83_cl at Station 14+90.29 thence S 90°0000" E a distance of 53.772 feet to a point 36.910 feet right of ASTH83_cl at Station 14+80.54 thence S 0°0000" W a distance of 92.202 feet to a point 11.000 feet left of ASTH83_cl at Station 13+90.92 thence along an arc 53.627 feet to the right, having a radius of 153.700 feet, the chord of which is N 37°36'54" W for a distance of 53.356 feet, to a point 11.000 feet left of ASTH83_cl at Station 14+40.71 thence N 31°2327" W a distance of 10.154 feet to a point 12.000 feet left of ASTH83_cl at Station 14+50.06 thence N 29°31'47" W a distance of 8.044 feet to a point 13.000 feet left of ASTH83_cl at Station 14+65.32 thence N 19°45'19" W a distance of 13.052 feet to a point 15.000 feet left of ASTH83_cl at Station 14+65.32 thence N 19°45'19" W a distance of 13.052 feet to a point 15.000 feet left of ASTH83_cl at Station 14+77.14 thence N 16°2766" W a distance of 10.638 feet to a point 16.000 feet left of ASTH83_cl at Station 14+69.29 thence N 10°17'00" W a distance of 4.011 feet to a point 16.129 feet left of ASTH83_cl at Station 14+60.99 and the POINT OF BEGINNING.

Alignment Name: Parcel 101-Take Alignment Description:

Commencing at 32, said point being the POINT OF BEGINNING; thence S 90°0000" E, 53.772 feet, thence S 0°0000" W, 92.202 feet, to a point on a curve 36, having a radius of 153.700 feet and a central angle of 19°59'27", thence along the arc of said curve a distance of 53.627 feet, said arc subtended by a chord bearing N 37°36'54" W, a distance of 53.356 feet. thence N 31°23'27" W, 10.154 feet, thence N 29°31'47" W, 8.044 feet, thence N 29°31'47" W, 8.044 feet, thence N 19°45'19" W, 13.052 feet, thence N 19°45'19" W, 13.052 feet, thence N 10°17'00" W, 4.001 feet. and the POINT OF BEGINNING; Containing 0.069 acres, more or less.

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Map Check Report

- Multiple parcels at one time
- Curvilinear & angular data is rounded





Intersecting Alignment Stations Report Complements Drafting > Intersecting Alignment Note



Surface Report Types Available

- Surfaces
- Surface Check



Surfaces Report

• Pretty basic reporting, since most surface data is related to cross-sections, volumes, etc.

Surfaces Report					
Surface:					Apply
Name		Descripti	ion		
Default					Close
existing	(Graded R	oadbed		
Design	(Created fr	om roadwa	y	Filter
April AsBuilt					Preferences
May As Built					110101010000
June As Built					Help
Name	Style		Descriptio	1 🔺	- + -
Name	Style		Descriptio	1 🔺	<u>+</u>
Breakline Feature1	Default			_	
Breakline Feature10	Default				
Breakline Feature11	Default				
Breakline Feature12	Default				
Breakline Feature13	Default				
Breakline Feature14	Default				
Breakline Feature2	Default				
Breakline Feature3	Default				
Breakline Feature4	Default				
Breakline Feature5	Default			•	
4				•	
🔽 Include Feature Poin	its				



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Surface Check Report

- Quality checking of a surface to allowable tolerances
- Similar to Compare Surface

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Pavement 234	7648.007	9341.183	130.705	130.705	0.000	BELOW	0.000	N	pavement
Pavement 235	7669.436	9328.307	130.893	130.893	0.000	BELOW	0.000	XIN	pavement
Pavement 236	7690.866	9315.431	131.080	131.080	0.000	BELOW	0.000	IN	pavement

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Points Outside of DTM	$\langle X \rangle$		XX	. X	X	X	X	X	X	X	X	X	X	X
ХХХХЭ		. X.,	XX	. X.	X	X	X	X	X	X	X.	X	X	X.
Total Points Outside	0	XX	. Х.	\times	$\langle \rangle$	$\overline{}$	$\overline{}$	$\langle X \rangle$	\sim		X	X	X	
X X X X X	6 - X	8	8 - 8	- X	- 8	- 8	- 8	- X	8	- X	8	8	8	8

					Points	170	136 🖂		
					💛 in Tol 📄	170	136		
					Out of Tol	\times o \times	$\times 0 \times$		
					% In Tol	100%	100%		
					% Out Tol	<u> </u>	0%		
_					Max Above	0.000	0.000		
h	🖉 Surface Che	eck Report			Max Below	0.000	0.000		
R	2001								
	Surface: De	esign	•						Apply
1	First Check Po	pints		C Second Che	eck Points-				Close
	Include:		+	Include:			-	₽	
	Selected:			Selected:					Filter
	Name	Style		Name		Style			Preferences
	Ground 101	ground		Pavement 1	01	pavemen	t –		
	Ground 102	around		Pavement 1	02	pavemen	t 🛛		Help
	Ground 103	around		Pavement 1	03	Davemen	t l		· · · · ·
	Ground 104	around		Pavement 1	04	Davemen	ł		
	Ground 105	around		Pavement 1	05	navemen	ŀ		
	Ground 106	around		Pavement 1	06	navemen	, F		
	Ground 107	ground		Pavement 1	07	navemen	, ,		
	Cound 107	ground		Development	00	pavemen			
	Ground 108	ground		Pavement 1	00	pavemen		-11	
	Jaround 109	ground	<u> </u>	Pavement I	09	pavemen	t	-	
	Tolerance:	0.2000		Tolerance:	0.0100			-1	
								_	



End-Area Volumes

• Volumes from cross-section sets

		End-Area Volumes								
		File								
		Cross Section Set:		Object	Source	Parent	Classification	Mass Ordinate	Cut Factor	Fill Factor
		Baseline	- +	existing	Surface				1.0000	1.0000
				Ballast	Component	Design	Designed	Exclude		1.0000
		General		Subballast	Component	Design	Designed	Exclude		1.0000
		Unsuitable Materia	ls by Feature							
End-Area ¥olumes					_ []	x				
File						_				
Cross Section Set: Baseline Cross Section Set: Baseline Cross Content of the section S	Surface ✓ existing ✓ Design	Type Existing Design	Method Standard Correct for Station Limit Use Stat Start Station Stop Station	I or Curvature s ion Limits 100+00.000	1 ¥ +					
Forced Balance As Built Annotation	C Cubic Yards	Cubic Feet	Ignore Areas S	Smaller Than:	0	Apply	Preferer	Inces		
1		Apply	Preferences	Close	Help					



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Multiple looks at the data

- Volumes
- Grade book
- Many style sheets!

								Added Cut:						
Baseline		XX.	 - Cut	Station Q	uantities	X.	. Fill		Mass					
Station	Factor	Агеа	Volume	Adjusted	Factor	Area	Volume	Adjusted	Ordinate					
100+00.00	1.000	133	XXO	XXO	1.000	\times 6								
101+00.00	1.000	79	393	393	1.000	56	115	X 115	X X 278					
101+96.05	×1.000		166	X X166	1.000		×444	444						
102+00.00	1.000	× 14	173	173	1.000	193	462	462	X X-11					
103+00.00	×1.000	6	× 37	× × 37	1.000	×141	618	618	-592					
103+50.00	1.000	<u> </u>		46	1.000	51	<u> </u>	<u>/</u> 177/	Å_^-724					
104+00.00	<u>_1.000</u>	67	102	102	1.000	<u>—</u> 34	78	78	-700					
105+00.00	1.000	<u>133</u>	370	370	<u></u> 1.000	∕`0.	<u> </u>	<u>^</u> 62	Å393					
105+77.91	_1.000		393	393	1.000		V ví	V O						
106+00.00	1.000	140	504	504		\sqrt{a}	\bigtriangleup	\bigtriangleup	\sim \sim 111					
107+00.00	1.000	23	301	301	1.000	29	54	54	359					
107+64.53	1.000		27	27	1.000		386	386	~~					
108+00.00	1.000	0	43	43	1.000	294	598	598	-197					
109+00.00	1.000			$\times \times 0$	1.000	607	1669	1669	-1866					
110+00.00	1.000	X O	C O	0	1.000	963	2907	2907	-4773					
111+00.00	1.000		XXO	XXÒ	1.000	1044	3717	3717	-8490					
111+75.00	1.000	XÒ	X O		1.000	800	2561	2561	-11051					
112+00.00	×1.000		XXo	ΧXο	1.000	688	689	689	-11740					

Station Type	Area	Volume	Factor	Adjusted Volume	Included in Mass Ordinate?	Mass Ordinate
100+00.00						Ó
Normal Cut:	133	0	1.000		Yes	
Normal Fill:	6		1.000	0	Yes	
Added Cut:		0	1.000	XXX	Yes	
Added Fill:			1.000		Yes	
Ballast:	50	XXO	1.000	XXX	No	
Subballast:	26	0	1.000	0	No	
101+00.00						278
Normal Cut:	79	393	× 1.000	393	Yes	
Normal Fill:	56	115	1.000	115	Yes	
Added Cut:		X Xo	Ă 1.000 .	X X Ø	Yes	
$\times^{\times}\times^{\times}\times^{\times}\times^{\times}$		Ň	1.000		Yes	
		184	Å (1.000)	<u></u>	No A	
me Adjusted Ordin	nate	96	1.000	96	No	



End-Area Volumes & As Builts

- 1st month (yellow)
- 2nd month (green)
 - Computed to design lines not overconstructed lines!



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Mass-Haul Diagram

- Save the results of *End Area Volumes* in the Report Browser (as a .xml file)
- Load the XML file in *Mass-Haul Diagram* to display the diagram

Mass-Haul Diagram	_ 🗆 ×
Main Title Grid A	xes
Mass-Haul Data File:	Browse
D:\temp\volumes.xml	Help
Direction Exa Exa Exa Exa Formation	aggeration
C Right to Left Ver	tical: 0.0100
Imperial Units © Cubic Yards ©	Cubic Feet
Symbology:	
Object Data Line	Name
Apply Pr	references



Other XML files

- XIN
- ITL
- IRD
 - Which can be loaded into the Report Browser
 - Also now accessible through Roadway designer



Report Browser & .XIN

Missing Named Symbologies Report

Report Created: 10/15/2007 Time: 9:43am

Missing Named Symbology

Used By Lane line FeatureStyle

Type

Named Symbologies Use Report

Report Created: 10/15/2007 Time: 9:44am

Named Symbology	Used By	Туре				
abutment	$\mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X}$					
	abutment	Geometry Line Feature Style				
Aggregate						
	Aggregate	Surface Feature Style				
Annotation-Plan						
	Default	ViewSurfaceElevations Preference				
	Default	ViewSurfaceElevations Preference				
	Default	ViewClosedArea Preference				
	Default	StationBaseClearanceAnnotation Preference				
	Default	StationBaseClearanceAnnotation Preference				
	Default	GeneralTracking Preference				
	Default	GeneralTracking Preference				
Annotation-Profile						
Annotation-XCS						
Ballast						
	Ballast	Surface Feature Style				
Base						
	Base	Surface Feature Style				
BB						
	вв	Surface Feature Style				
	BB	Survey Feature Style				
BBERM						
	BBERM	Survey Feature Style				
BBOARD						
	BBOARD	Survey Feature Style				
BC						
	вс	Survey Feature Style				

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Report Browser & .IRD

File>Open •

File Name: D:\data\Rail Modeling\railway.ird

Corridor: Single Track

Template: Single Track - Tangent - Ballasted Start Station: 100+00.00 Interval: 10.000000

Jescription:									
				···· Constra	ints · · · ·				
Point Name	<u> </u>	<u> </u>	Туре	Value		Parent	Slope	Width	Delta Y
B2	5 250	0.602	Horizontal	-5.250	PGL				
	-0.200	-0.000	Vector	-5.250	Left Rail				
							50.0000%	-4.296	-2.148
n X X X X	0.540	Xa Tak	Slope	50.0000%	B2				
b 3	-9,040	-2.731	Slope	4.1667%	SB1				
							4.1667%	9.546	0.398
			Mara						
SB1	0.000	-2.333	None						
							-4,1667%	9.546	-0.398
ва	0.546	2 724	Slope	-4.1667%	SB1				
7			Slope	-50.0000%	B5				
							-50.0000%	-4.296	2.148
	Å 5 260	0.600	Horizontal	5.250	PGL 🔨				
\sim \times \times \times		-0.000	Vector	5.250	Left Rail				
							0.0000%	XX.	0.000
							0.0000 //	10.500	/ 0.000
component: Subballast									
Description:				X X	s x .				
				···· Constra	ints · · · ·				
Point Name	<u> </u>	<u> </u>	Туре	Value	$ \longrightarrow $	Parent	Slope	Width	Delta Y
	$\sim \sim$		None						
SB1	0.000	-2.333	None						
							4.1667 %	11 545	-0.481
	— X — X		Xeland X	60.0000 w/	Ceno C				





Additional information in the XML Data directory

- ASCII output Style sheets
 - -Creating ASCII Output Style Sheets.pdf
- Inclusion of an XML in an XML
 - -XML Lookup Table Style Sheets.pdf

Supportive files

- •_Report element formatting
 - format.xsl
 - -<u>Raw-xml.xsl</u>
 - –<u>ShowAll.xsl</u>





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Style Sheet Modifications

- Look at the schema
 - <u>XML Datalen\Schemas</u>
 - Only in English
- Look at style sheets that are close to what you want!
 It is always easier to start from something than nothing!
- Look at the Raw-xml.xsl to verify the data required is available in the similar report.
- Make a copy of close XSLT that contains the data.
- Open that copy in your preferred XML editor
 - Notepad ++ is great and free!
 - http://notepad-plus-plus.org/





What's next?

- Test your XSLT!!! Think of all the ways your users will run it.
- Edit the help so that end users of the report will be able to run it successfully
- If you want a special java script solution or HTML solution search the web for examples
- For XSLT help search Google
- Check out

http://www.w3schools.com/xsl/xsl_summary.asp

a Great source!



Lets take a look

