



Steigerung der Effektivität von BIM-Infrastrukturplanungen mit IFC, IDS und bSDD



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Vertriebsleiter

JWS - SIERRASOFT

Roland Schneider studierte Maschinenbau und war zehn Jahre in der Konstruktion von Sondermaschinen tätig.

Vor mehr als 30 Jahren war er Mitgründer der Fa. JWS, die seit dieser Zeit verschiedene CAD-Lösungen vertreibt.

2000 begann die Zusammenarbeit mit der Fa. SierraSoft. Seitdem werden deren Produkte für den deutschsprachigen Raum von JWS als Distributor vertrieben.



SierraSoft

BIM-Softwarelösungen für Vermessung und Infrastrukturprojekte

SierraSoft entwickelt und vermarktet BIM-Softwarelösungen für die Bereiche Vermessung, Infrastrukturplanung und das Bauwesen.

Die Produkte von SierraSoft sind in mehreren Sprachen erhältlich (Italienisch, Englisch, Deutsch, Spanisch, Portugiesisch, Französisch, usw.), sie enthalten die wichtigsten internationalen Standards und wurden an die spezifischen Anforderungen mehrerer Länder angepasst (Italien, USA, Deutschland, Spanien, Portugal, Frankreich, usw.).

Die Produkte von SierraSoft werden in mehr als 15 Ländern von Vermessungsingenieuren, Architekten, Ingenieuren, Ingenieurbüros, Architekturbüros, Bauunternehmen, Forschungsinstituten und öffentlichen Einrichtungen eingesetzt.

Steigerung der Effektivität von BIM-Infrastrukturplanungen mit IFC, IDS und bSDD

Steigerung der Effektivität von BIM-Infrastrukturplanungen mit IFC, IDS und bSDD

Straßen- und Schieneninfrastrukturprojekte sind sowohl in der Planung als auch in der Informationsmodellierung hochkomplex. Sie erfordern eine intensive Zusammenarbeit und Interoperabilität zwischen verschiedenen Fachbereichen bereits in den ersten Phasen des Projekts, wobei die geometrische Modellierung in die Planungsaktivität integriert und nie getrennt wird.

Diese Präsentation zeigt die Ergebnisse der Arbeit zur Optimierung der Datenmodellierung für Infrastrukturen und zur Verbesserung der Modellqualität durch die Implementierung der IFC-, IDS- und bSDD-Standards von buildingSMART.

Die Ergebnisse dieser Arbeit wurden vollständig in unsere Software implementiert und sind verfügbar.

Diese Arbeit ist das Ergebnis der Zusammenarbeit zwischen SierraSoft und Rachele Bernardello von der Universität Padua.

von Informationsanforderungen bis zur Modellvalidierung

Die drei wesentlichen Standards



Industry Foundation Classes

Dies bietet ein Schema für die Modellierung und den Datenaustausch für Infrastrukturplanungen.

Es muss mindestens in Version 4.3 vorliegen und es sind bestimmte Domänen zu verwenden (Straßen, Schienen, Brücken usw.).



Information Delivery Specification

Hier werden die erforderlichen Informationen und deren Verwaltung während des Projektlebenszyklus festgelegt.

Es gibt uns in einem maschinenlesbaren Format an, welche Informationen benötigt werden, wann sie benötigt werden und in welchem Format sie bereitgestellt werden müssen.

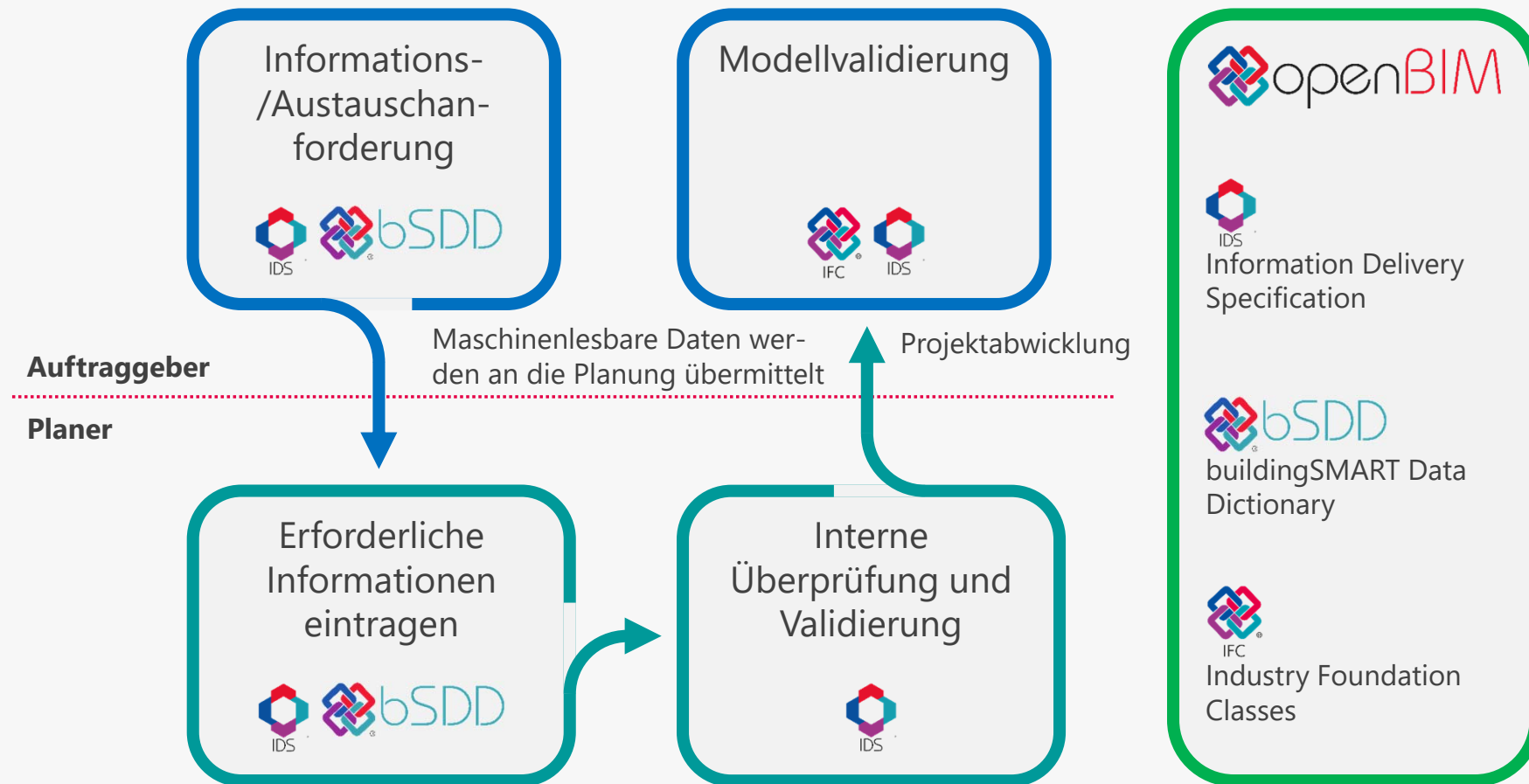


buildingSMART Data Dictionary

Dies bietet ein strukturiertes und zuverlässiges Glossar für die in der Bauindustrie verwendete Terminologie und fördert so die Konsistenz und Interoperabilität.

Es hilft, Unklarheiten und Missverständnisse aufgrund unterschiedlicher Interpretationen von Begriffen zu vermeiden.

Von den Informationsanforderungen bis zur Modellvalidierung



Wo und wie man IDS und bSDD zur Optimierung einsetzt

Wo und wie wir IDS und bSDD einsetzen, verändert dies die Optimierungsebene vollständig, was zu einer Verbesserung der Projektqualität und einer Reduzierung von Kosten und Zeit führt. Wir können IDS und bSDD auf drei Arten einsetzen:

1. IFC-Datei

In der endgültigen IFC-Datei, bevor sie an den Auftraggeber übergeben wird. Diese Aktivität erfolgt nach und getrennt von den Aktivitäten der Planung und BIM-Erstellung.

2. Software-Modell für die BIM-Erstellung

IDS und bSDD werden nach Abschluss der Planung innerhalb der BIM-Autorensoftware, aber getrennt von der Planungstätigkeit angewendet.

3. Parametrischer Modellierer für die Planung von Straßen und Schienenwegen

IDS und bSDD werden zur Definition von Parametern für die Informationsmodellierung verwendet und das Modell ist automatisch das Ergebnis der Planungen. Planung, BIM-Authoring und die Verwendung von IDS und bSDD sind Teil ein und derselben Aktivität.

Umsetzung: eine Fallstudie

Als Konzeptnachweis haben wir eine spezifische Fallstudie erstellt: **die Planung einer Straße mit besonderem Schwerpunkt auf den Gehweg.**

- Wir haben die Informationsanforderungen auf IDS abgebildet.
- Wir haben eine bSDD-Testdomäne für Gehwege und Straßen mit ihren jeweiligen Eigenschaften erstellt.
- Anschließend wurde der Workflow repliziert, der die Datenprüfungen und die Überprüfung der Straßenleistung umfasst und dabei die mit bSDD verknüpften IDS-Standards eingehalten.
- Als Software haben wir SierraSoft Infra Design Studio verwendet, die bereits eine parametrische Informationsmodellierung enthält, in die das IDS- und bSDD-Management integriert wurde.

Steigerung der Effektivität von BIM-Infrastrukturplanungen mit IFC, IDS und bSDD

Erstellung des IDS (durch den Auftraggeber)

Informations- und Anforderungen des Austausches

Erstellung des IDS

usBIM.IDSeditor - Google Chrome
ids-editor.usbim.com/doc/35651eb5e0094842a007f830bb2f63b9/info

usBIM.IDSeditor IDS_IBO IDS_IBO.ids Bozza Ultimo salvataggio alle ore 10:18:25 MC

Documento valido

Dati generali

Specifiche

1. Course WearingCourse

Report

XML

Audit

Dati generali

Titolo	IDS_Road IBO Project	Data	07/10/2024
Email autore	rachele.bernardello@unipd.it	Versione	1.0
Scopo	IDS to project implementation	Copyright	
Milestone		Descrizione	

Versione 1.5.7.0
Copyright © 2024 ACCA software S.p.A. Scarica

Erstellung des IDS

usBIM.IDSeditor - Google Chrome
ids-editor.usbim.com/doc/35651eb5e0094842a007f830bb2f63b9/specification/0

usBIM.IDSeditor IDS_IBO IDS_IBO ids Bozza Ultimo salvataggio alle ore 10:18:25 MC

Documento valido

Dati generali
Specifiche
1. Course WearingCourse
Report
XML
Audit

Course WearingCourse

Generale Filtri Requisiti

Nome Course WearingCourse Identificatore

Versioni IFC IFC4X3

Descrizione Istruzioni

Specifica in formato leggibile

Il modello DEVE contenere entità che hanno

- classe IFC IFCCOURSE.USERDEFINED
- attributo ObjectType = WEARINGCOURSE

che SODDISFANO i seguenti requisiti

- AVERE classificazione **Properties Road.ROD_C_02** (Istruzioni: Must be classified as 'Strato di usura' according to the bSDD Properties Road)
- AVERE classificazione **IFC.IfCourse** (Istruzioni: Must be classified as 'IfcCourse' according to the bSDD IFC 4.3)
- AVERE proprietà **Portanza** del PSet **Strato_CaratteristichePrestazionali** (IFCREAL)
- AVERE proprietà **PSI** del PSet **Strato_CaratteristichePrestazionali** (IFCREAL)
- AVERE proprietà **Aderenza** del PSet **Usura_CaratteristichePrestazionali** (IFCREAL)
- AVERE proprietà **Thickness** del PSet **Qto_CourseBaseQuantities** (IFCREAL) con valore ≥ 0.02 (nonché: ≤ 0.07) (Istruzioni: The value must be between 0.02 and 0.07)
- AVERE proprietà **Volume** del PSet **Qto_CourseBaseQuantities** (IFCREAL)

Versione 1.5.7.0
Copyright © 2024 ACCA software S.p.A.
<https://ids-editor.usbim.com/doc/35651eb5e0094842a007f830bb2f63b9/specification/0>

Erstellung des IDS

usBIM.IDSeditor - Google Chrome

ids-editor.usbim.com/doc/35651eb5e0094842a007f830bb2f63b9/xml

usBIM.IDSeditor IDS_IBO IDS_IBO.ids Bozza Ultimo salvataggio alle ore 10:18:25 MC

Documento valido

Dati generali

Specifiche

1. Course WearingCourse

Report

XML

Audit

XML

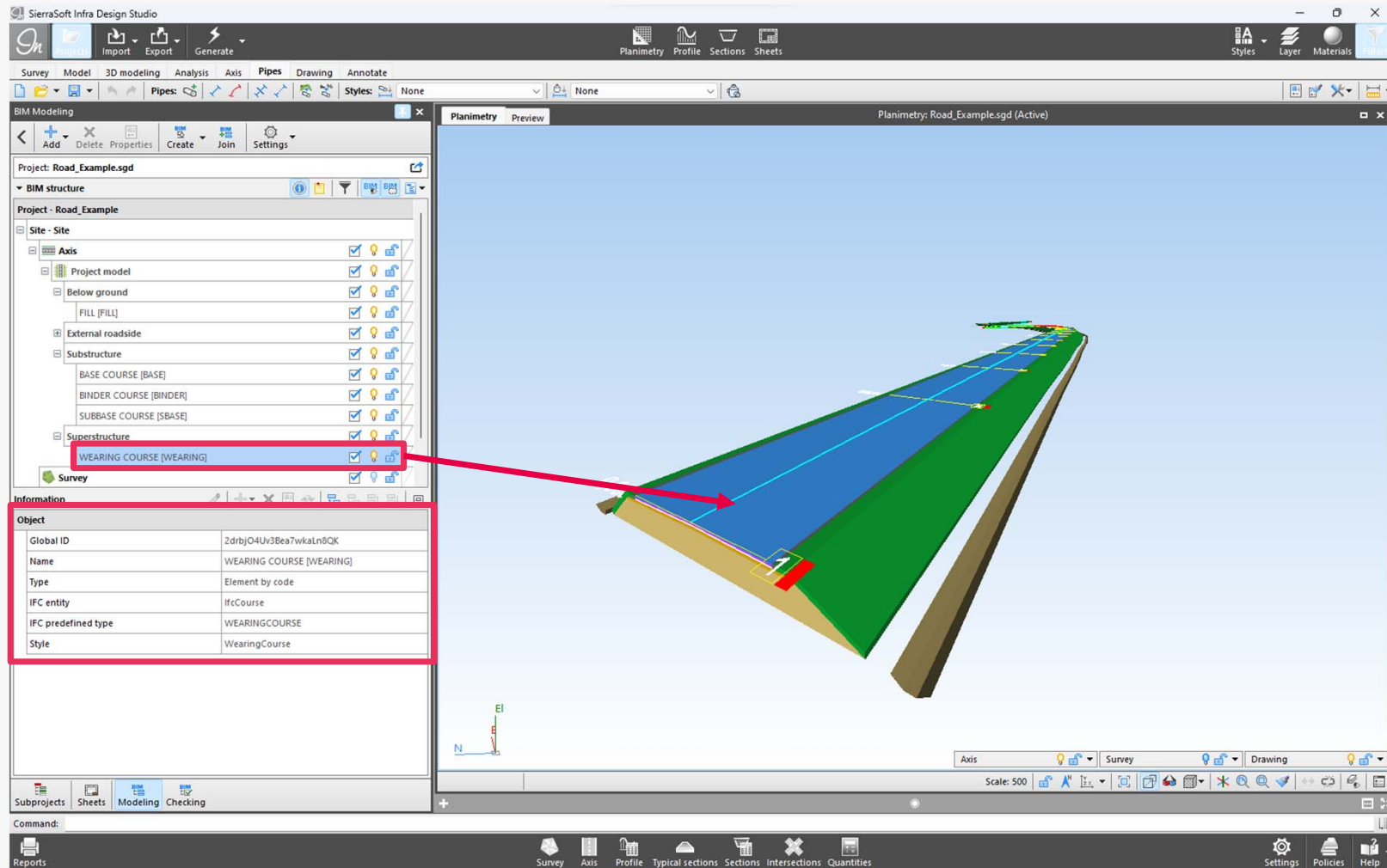
Scarica

```
1 <ids:ids xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://standards.buildingsmart.org/IDS http
2 <!-- edited with usBIM.IDSeditor (http://www.accasoftware.com) -->
3 <ids:info>
4   <ids:title>IDS_Road IBO Project</ids:title>
5   <ids:version>1.0</ids:version>
6   <ids:author>rachele.bernardello@unipd.it</ids:author>
7   <ids:date>2024-10-07</ids:date>
8   <ids:purpose>IDS to project implementation</ids:purpose>
9 </ids:info>
10 <ids:specifications>
11   <ids:specification ifcVersion="IFC4X3" name="Course WearingCourse" minOccurs="1" maxOccurs="unbounded">
12     <ids:applicability>
13       <ids:entity>
14         <ids:name>
15           <ids:simpleValue>IFCCOURSE</ids:simpleValue>
16         </ids:name>
17         <ids:predefinedType>
18           <ids:simpleValue>USERDEFINED</ids:simpleValue>
19         </ids:predefinedType>
20       </ids:entity>
21       <ids:attribute>
22         <ids:name>
23           <ids:simpleValue>ObjectType</ids:simpleValue>
24         </ids:name>
25         <ids:value>
26           <ids:simpleValue>WEARINGCOURSE</ids:simpleValue>
27         </ids:value>
28       </ids:attribute>
29     </ids:applicability>
30   <ids:requirements>
31     <ids:classification minOccurs="1" maxOccurs="unbounded" instructions="Must be classified as 'Strato di usura' according to the bSDD Proprieties Road">
32       <ids:value>
33         <ids:simpleValue>RCD_C_02</ids:simpleValue>
34       </ids:value>
35       <ids:system>
36         <ids:simpleValue>Proprieties Road</ids:simpleValue>
37       </ids:system>
38     </ids:classification>
39   <ids:classification minOccurs="1" maxOccurs="unbounded" instructions="Must be classified as 'IfcCourse' according to the bSDD IFC 4.3">
40     <ids:value>
41       <ids:simpleValue>IfcCourse</ids:simpleValue>
42     </ids:value>
43     <ids:system>
```

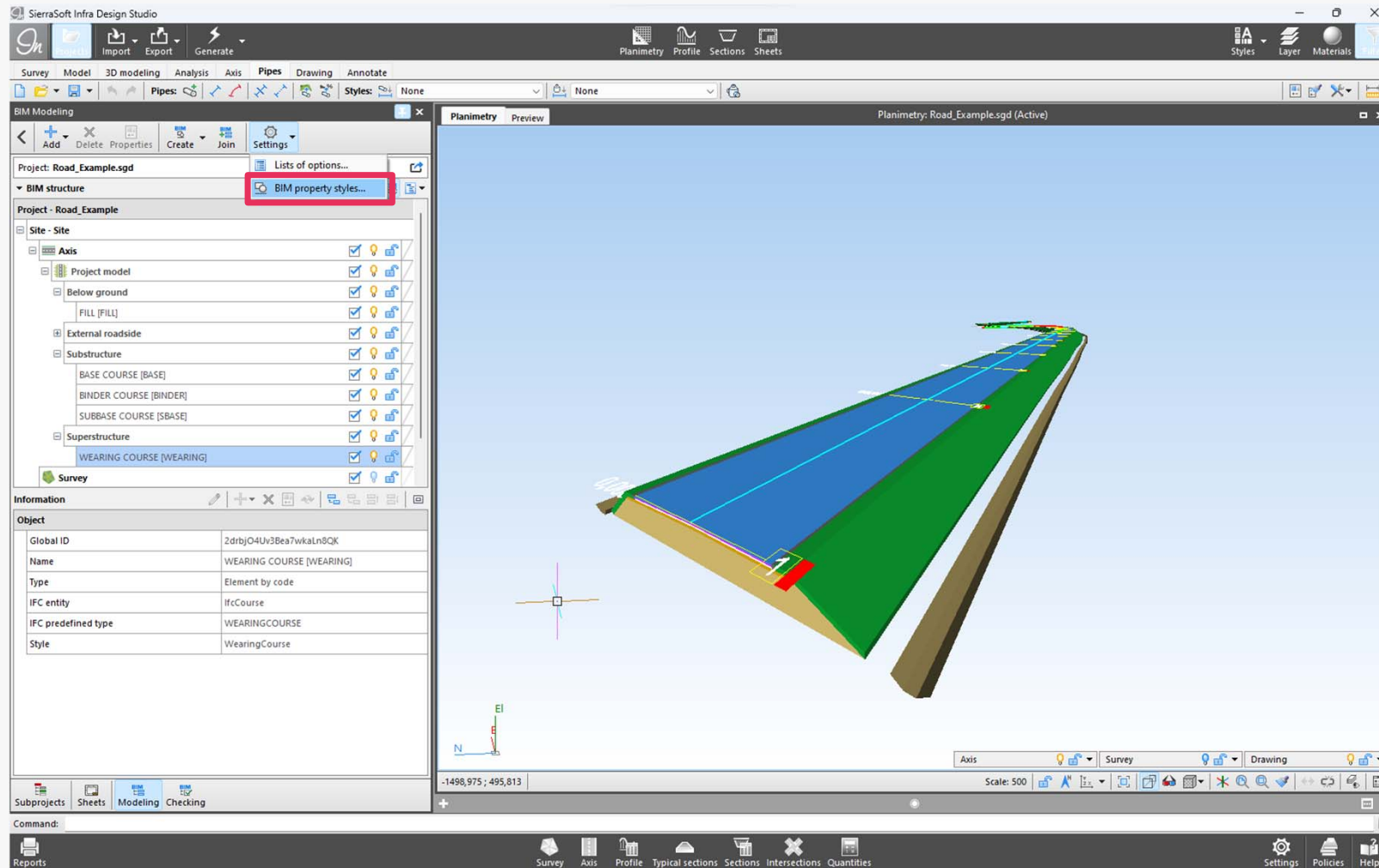
Datenmodellierung mit bSDD

Erforderliche Informationen definieren

Datenmodellierung mit bSDD



Datenmodellierung mit bSDD

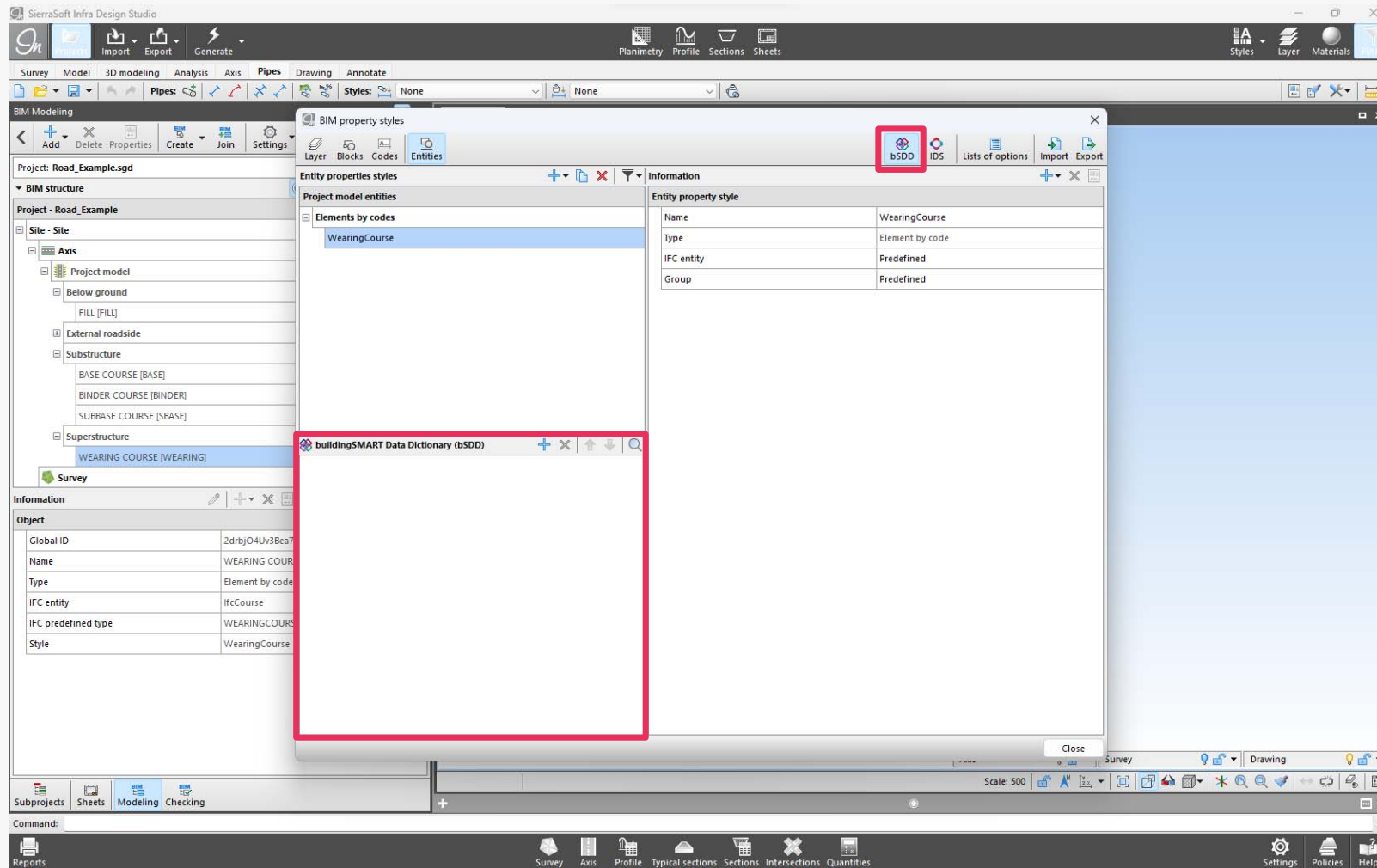


Datenmodellierung mit bSDD

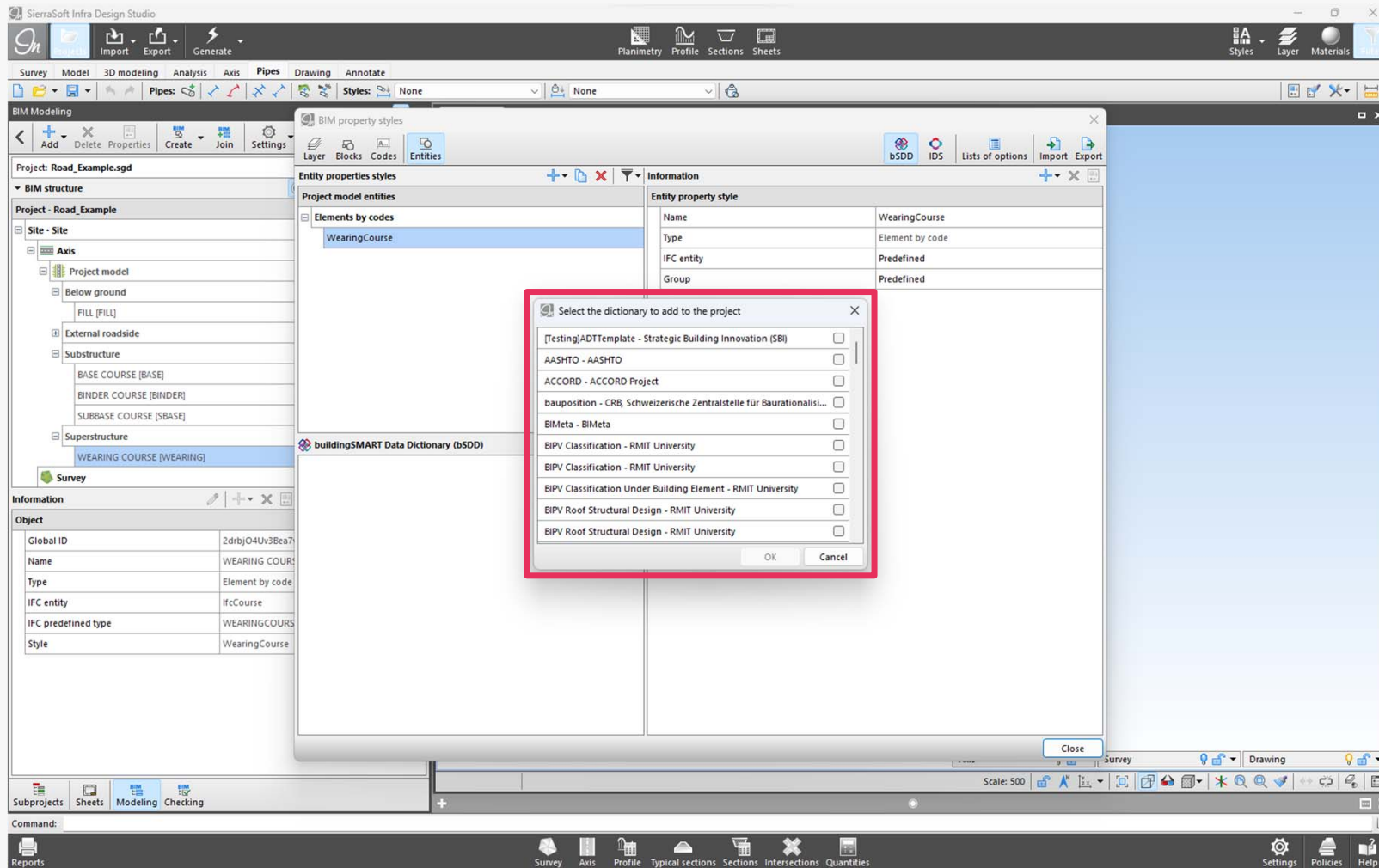
The screenshot displays the SierraSoft Infra Design Studio interface. The 'BIM property styles' dialog box is open, showing the 'Entities' tab. The 'Entity properties styles' section is active, with 'Elements by codes' selected. The 'WearingCourse' entity is highlighted in the list. The 'Entity property style' table provides details for the selected entity.

Entity property style	
Name	WearingCourse
Type	Element by code
IFC entity	Predefined
Group	Predefined

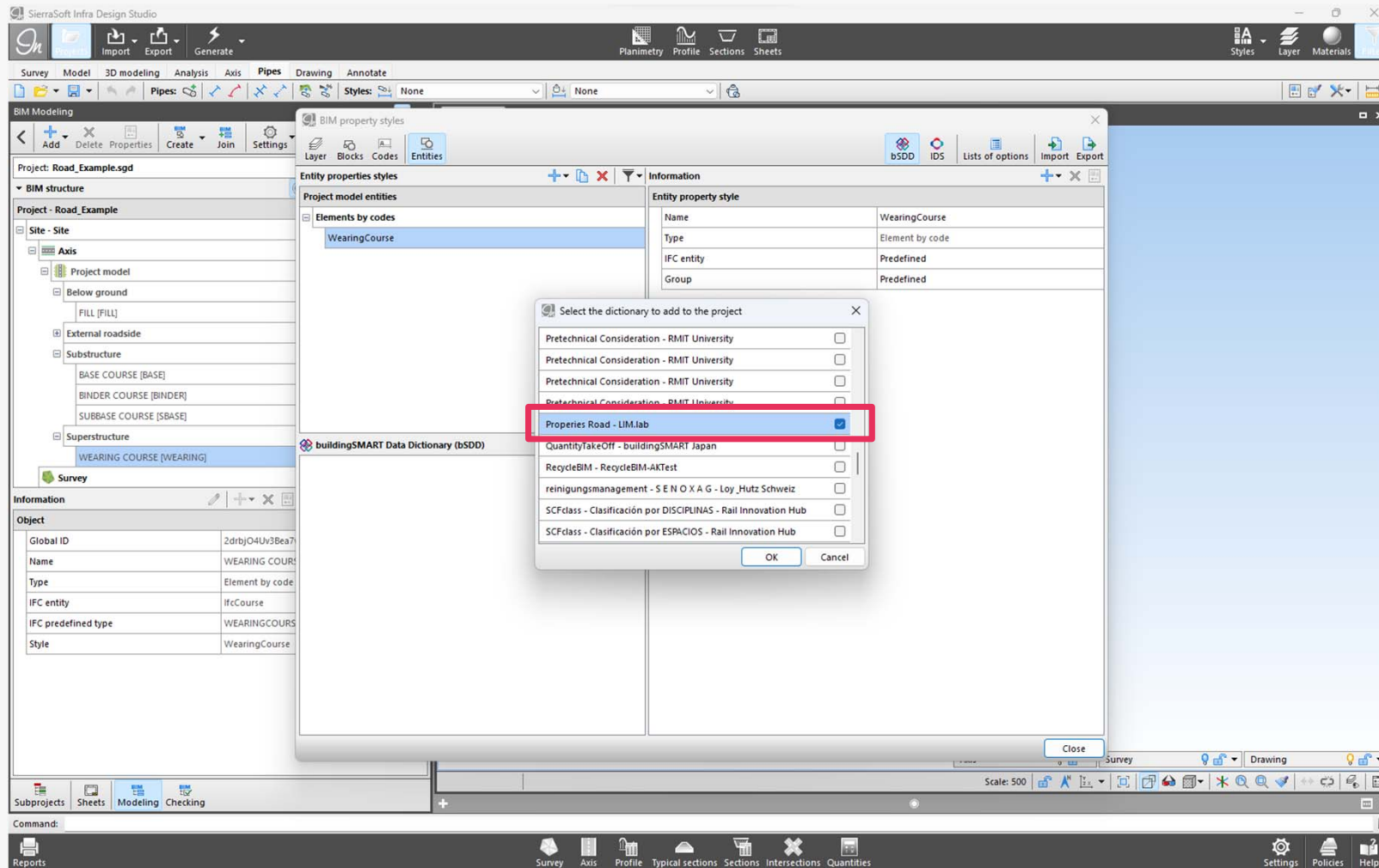
Datenmodellierung mit bSDD



Datenmodellierung mit bSDD



Datenmodellierung mit bSDD



Data modeling using bSDD

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project structure tree on the left, with 'WEARING COURSE [WEARING]' selected. The 'BIM property styles' dialog is open, showing 'Entity properties styles' and 'Information' tabs. The 'Entity properties styles' tab lists 'WearingCourse' under 'Elements by codes'. The 'Information' tab shows details for 'WearingCourse', including Name, Type, IFC entity, and Group. Below this, the 'buildingSMART Data Dictionary (bSDD)' is open, showing 'Properties Road - LIM.lab' with various metadata fields like Name, Organization, Version, State, Favorite language code, and URI. The 'Classes' section is also visible, showing 'Strato' and 'Strato Usura'.

BIM property styles

Entity properties styles

Project model entities

Elements by codes

WearingCourse

Information

Entity property style

Name	WearingCourse
Type	Element by code
IFC entity	Predefined
Group	Predefined

buildingSMART Data Dictionary (bSDD)

Properties Road - LIM.lab

Information

Name	Properties Road
Organization	LIM.lab
Version	1.0
State	Preview
Favorite language code	EN
URI	https://identifier.buildingsmart.org/u...

Classes

Strato

Strato Usura

Datenmodellierung mit bSDD

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project named 'Road_Example.sgd' with a BIM structure tree on the left. The 'WearingCourse' element is selected. The 'BIM property styles' dialog is open, showing the 'Entity properties styles' tab. The 'WearingCourse' element is selected in the 'Elements by codes' list. The 'Entity property style' table shows the following data:

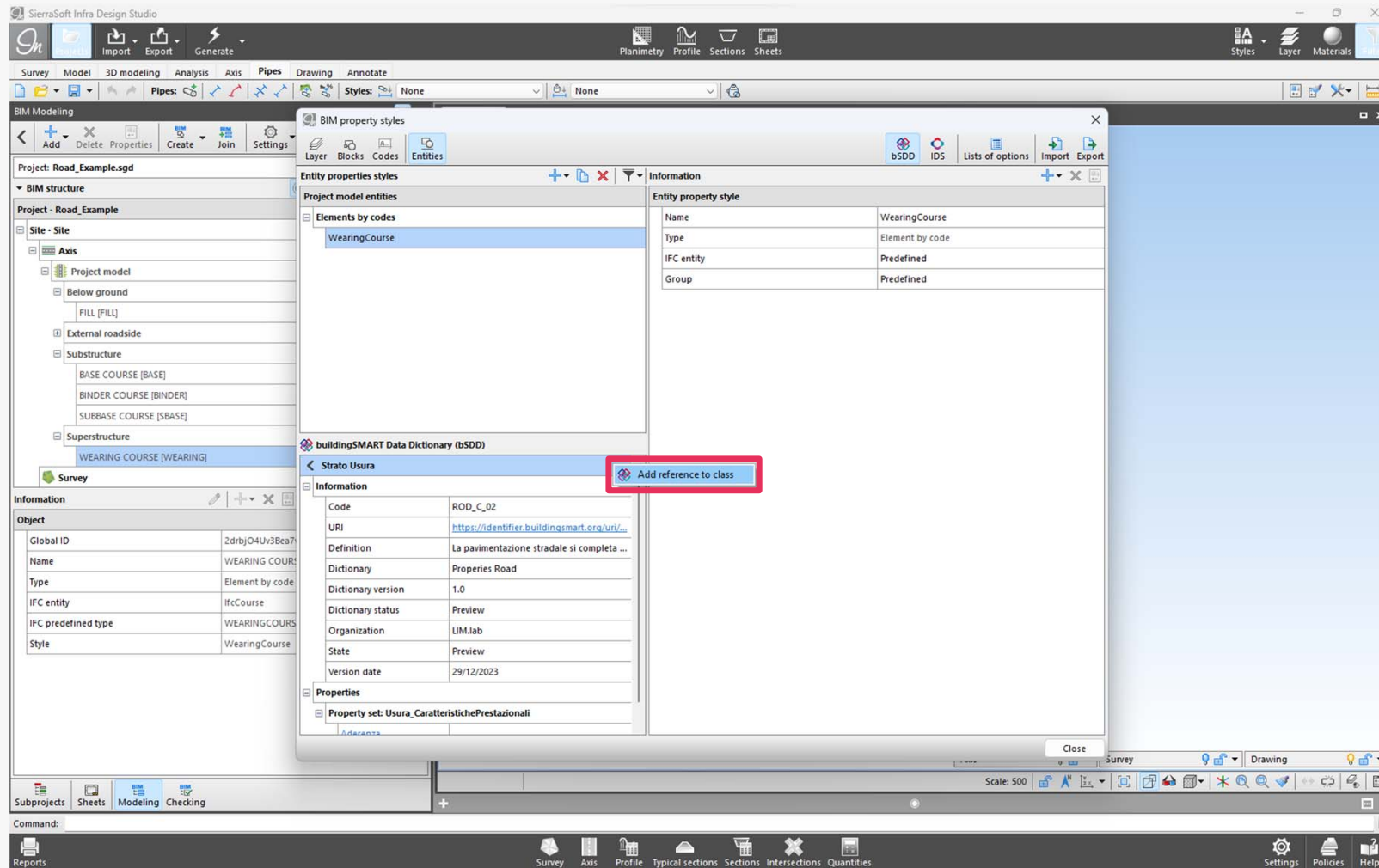
Name	WearingCourse
Type	Element by code
IFC entity	Predefined
Group	Predefined

The 'buildingSMART Data Dictionary (bSDD)' dialog is also open, showing the 'Strato Usura' dictionary. The 'Information' tab is active, displaying the following data:

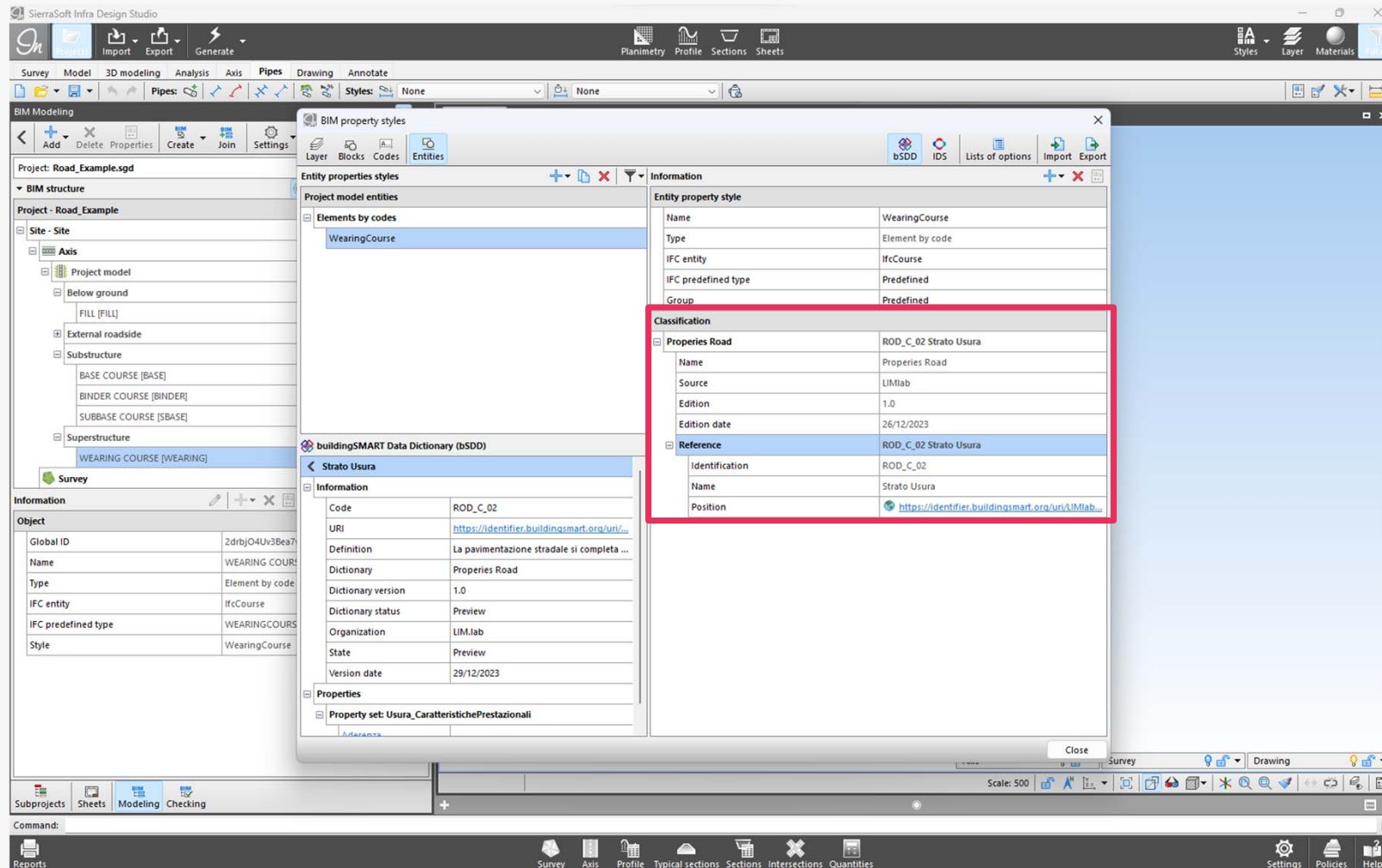
Code	ROD_C_02
URI	https://identifier.buildingsmart.org/uri/...
Definition	La pavimentazione stradale si completa ...
Dictionary	Properies Road
Dictionary version	1.0
Dictionary status	Preview
Organization	LIM.lab
State	Preview
Version date	29/12/2023

The 'Properties' tab is also visible, showing the 'Property set: Usura_CaratteristichePrestazionali'.

Datenmodellierung mit bSDD



Datenmodellierung mit bSDD



Datenmodellierung mit bSDD

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project named 'Road_Example.sgd' with a BIM structure tree on the left. The 'Wearing Course' element is selected. A 'BIM property styles' dialog is open, showing the 'Entities' tab. The 'Entity properties styles' section lists 'WearingCourse'. The 'Information' tab shows details for 'WearingCourse', including its IFC entity 'IfcCourse' and predefined type 'Predefined'. The 'Classification' section shows 'Properties Road' with code 'ROD_C_02 Strato Usura'. The 'Reference' section shows 'ROD_C_02 Strato Usura' with identification 'ROD_C_02' and name 'Strato Usura'. The 'buildingSMART Data Dictionary (bSDD)' dialog is also open, showing the 'Information' tab for 'ROD_C_02'. The 'Properties' section is highlighted with a red box, showing the property set 'Usura_CaratteristichePrestazionali' and the property 'Aderenza'.

BIM property styles

Entity properties styles

Project model entities

Elements by codes

WearingCourse

Information

Entity property style

Name	WearingCourse
Type	Element by code
IFC entity	IfcCourse
IFC predefined type	Predefined
Group	Predefined

Classification

Properties Road	ROD_C_02 Strato Usura
Name	Properties Road
Source	LIMlab
Edition	1.0
Edition date	26/12/2023

Reference

ROD_C_02 Strato Usura	
Identification	ROD_C_02
Name	Strato Usura
Position	https://identifier.buildingsmart.org/uri/LIMlab...

buildingSMART Data Dictionary (bSDD)

Information

Code	ROD_C_02
URI	https://identifier.buildingsmart.org/uri/...
Definition	La pavimentazione stradale si completa ...
Dictionary	Properties Road
Dictionary version	1.0
Dictionary status	Preview
Organization	LIMlab
State	Preview

Properties

Property set: Usura_CaratteristichePrestazionali

Aderenza

Datenmodellierung mit bSDD

The screenshot shows the SierraSoft Infra Design Studio interface. The main window displays a project structure tree on the left, a central view area, and a right-hand panel with various toolbars. A 'BIM property styles' dialog box is open, showing the 'Entities' tab. The 'Entity properties styles' section lists 'WearingCourse' under 'Elements by codes'. The 'Information' section provides details about the entity, including its code, URI, and definition. The 'Properties' section shows the 'Aderenza' property. A red box highlights the 'Add reference to class' and 'Add property' buttons at the bottom of the dialog.

Entity properties styles	
Project model entities	
Elements by codes	
WearingCourse	

Entity property style	
Name	WearingCourse
Type	Element by code
IFC entity	IfcCourse
IFC predefined type	Predefined
Group	Predefined

Classification	
Properties Road	ROD_C_02 Strato Usura
Name	Properties Road
Source	LIMlab
Edition	1.0
Edition date	26/12/2023
Reference	ROD_C_02 Strato Usura
Identification	ROD_C_02
Name	Strato Usura
Position	https://identifier.buildingsmart.org/uri/LIMlab...

buildingSMART Data Dictionary (bSDD)	
Code	ROD_C_02
URI	https://identifier.buildingsmart.org/uri/...
Definition	La pavimentazione stradale si completa ...
Dictionary	Properties Road
Dictionary version	1.0
Dictionary status	Preview
Organization	LIM.lab
State	Preview
Version date	29/12/2023

Properties	
Property set: Usura_CaratteristichePrestazionali	
Aderenza	

Buttons: Add reference to class, Add property

Datenmodellierung mit bSDD

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project named 'Road_Example.sgd' with a BIM structure tree on the left. The 'Wearing Course' element is selected. The 'BIM property styles' dialog is open, showing the 'Entity properties styles' tab. The 'WearingCourse' element is selected, and its properties are displayed in the 'Properties' section. The 'Usura_CaratteristichePrestazionali' property set is highlighted, showing the 'Aderenza (ROD_P_02)' property with a value of 0,000. The 'buildingSMART Data Dictionary (bSDD)' dialog is also open, showing the 'Information' tab for the 'ROD_C_02' code. The 'Properties' section of the bSDD dialog shows the 'Usura_CaratteristichePrestazionali' property set, which is linked to the 'Aderenza' property in the BIM property styles dialog.

BIM property styles

Entity properties styles

Project model entities

Elements by codes

WearingCourse

Information

Entity property style

Name	WearingCourse
Type	Element by code
IFC entity	IfcCourse
IFC predefined type	Predefined
Group	Predefined

Properties

Usura_CaratteristichePrestazionali

Aderenza (ROD_P_02)	0,000
---------------------	-------

Classification

Properties Road

Name	Properties Road
Source	LIMlab
Edition	1.0
Edition date	26/12/2023

Reference

Identification	ROD_C_02
Name	Strato Usura
Position	https://identifier.buildingsmart.org/uri/LIMlab...

buildingSMART Data Dictionary (bSDD)

Information

Code	ROD_C_02
URI	https://identifier.buildingsmart.org/uri/LIMlab...
Definition	La pavimentazione stradale si completa ...
Dictionary	Properties Road
Dictionary version	1.0
Dictionary status	Preview
Organization	LIMlab
State	Preview
Version date	29/12/2023

Properties

Property set: Usura_CaratteristichePrestazionali

Aderenza	
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Datenmodellierung mit bSDD

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project named 'Road_Example.sgd' with a BIM structure tree on the left. The 'Wearing Course' element is selected. A 'BIM property styles' dialog is open, showing the 'Entity properties styles' tab. The 'WearingCourse' entity is selected, and its properties are displayed in the 'Information' pane. The 'Properties' section shows 'Usura_CaratteristichePrestazionali' with a value of '0,000'. The 'Classification' section shows 'Properties Road' with a value of 'ROD_C_02 Strato Usura'. The 'Reference' section shows 'Identification' with a value of 'ROD_C_02' and 'Position' with a value of 'Strato Usura'. The 'Classes' section shows 'Strato' and 'Strato Usura'. The 'bSDD' tab is also visible, showing the 'buildingSMART Data Dictionary (bSDD)' and the 'Properties Road - LIM.lab' dictionary. The 'Information' pane shows the 'Entity property style' with fields for Name, Type, IFC entity, IFC predefined type, and Group. The 'Properties' section shows 'Usura_CaratteristichePrestazionali' with a value of '0,000'. The 'Classification' section shows 'Properties Road' with a value of 'ROD_C_02 Strato Usura'. The 'Reference' section shows 'Identification' with a value of 'ROD_C_02' and 'Position' with a value of 'Strato Usura'. The 'Classes' section shows 'Strato' and 'Strato Usura'. The 'bSDD' tab is also visible, showing the 'buildingSMART Data Dictionary (bSDD)' and the 'Properties Road - LIM.lab' dictionary.

SierraSoft Infra Design Studio

Survey Model 3D modeling Analysis Axis Pipes Drawing Annotate

Import Export Generate

Planimetry Profile Sections Sheets

Styles Layer Materials

BIM Modeling

Project: Road_Example.sgd

BIM structure

Project - Road_Example

Site - Site

Axis

Project model

Below ground

FILL [FILL]

External roadside

Substructure

BASE COURSE [BASE]

BINDER COURSE [BINDER]

SUBBASE COURSE [SBASE]

Superstructure

WEARING COURSE [WEARING]

Survey

Information

Object

Global ID

2drbjO4Uv3Bea7

Name

WEARING COUR

Type

Element by code

IFC entity

IfcCourse

IFC predefined type

WEARINGCOURS

Style

WearingCourse

BIM property styles

Entity properties styles

Project model entities

Elements by codes

WearingCourse

Information

Entity property style

Name

WearingCourse

Type

Element by code

IFC entity

IfcCourse

IFC predefined type

Predefined

Group

Predefined

Properties

Usura_CaratteristichePrestazionali

Aderenza [ROD_P_02]

0,000

Classification

Properties Road

ROD_C_02 Strato Usura

Name

Properties Road

Source

LIM.lab

Edition

1.0

Edition date

26/12/2023

Reference

ROD_C_02 Strato Usura

Identification

ROD_C_02

Name

Strato Usura

Position

<https://identifier.buildingsmart.org/uri/LIM.lab...>

buildingSMART Data Dictionary (bSDD)

Properties Road - LIM.lab

Information

Name

Properties Road

Organization

LIM.lab

Version

1.0

State

Preview

Favorite language code

EN

URI

<https://identifier.buildingsmart.org/uri/LIM.lab...>

Classes

Strato

Strato Usura

Close

Scale: 500

Survey Axis Profile Typical sections Sections Intersections Quantities

Settings Policies Help

Subprojects Sheets Modeling Checking

Command:

Reports

Datenmodellierung mit bSDD

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project structure for 'Road_Example.sgd' with a tree view on the left. The 'BIM property styles' dialog is open, showing the 'Entity properties styles' tab. The 'Project model entities' list includes 'WearingCourse'. The 'Entity property style' table shows details for 'WearingCourse', including its IFC entity and group. The 'Properties' section lists 'Usura_CaratteristichePrestazionali' and 'Strato_CaratteristichePrestazionali'. The 'Strato_CaratteristichePrestazionali' table has three rows: 'Aderenza [ROD_P_02]', 'Portanza [ROD_P_01]', and 'PSI [ROD_P_05]'. The 'buildingSMART Data Dictionary (bSDD)' window is also open, showing the 'Properties Road' dictionary. A red arrow points from the 'Strato_CaratteristichePrestazionali' table in the BIM property styles dialog to the 'Properties Road' dictionary in the bSDD window.

Entity property style	Name	Type	IFC entity	IFC predefined type	Group
WearingCourse	WearingCourse	Element by code	IfcCourse	Predefined	Predefined

Properties	Value
Usura_CaratteristichePrestazionali	Aderenza [ROD_P_02] 0,000
Strato_CaratteristichePrestazionali	Portanza [ROD_P_01] 0,000
	PSI [ROD_P_05] 0,000

Code	URI	Definition	Dictionary	Dictionary version	Dictionary status	Preview	Organization	State	Version date
ROD_C_01	https://identifier.buildingsmart.org/uri/...	Quantità di materia omogenea, di vario ...	Properties Road	1.0	Preview		LIM.lab	Preview	29/12/2023

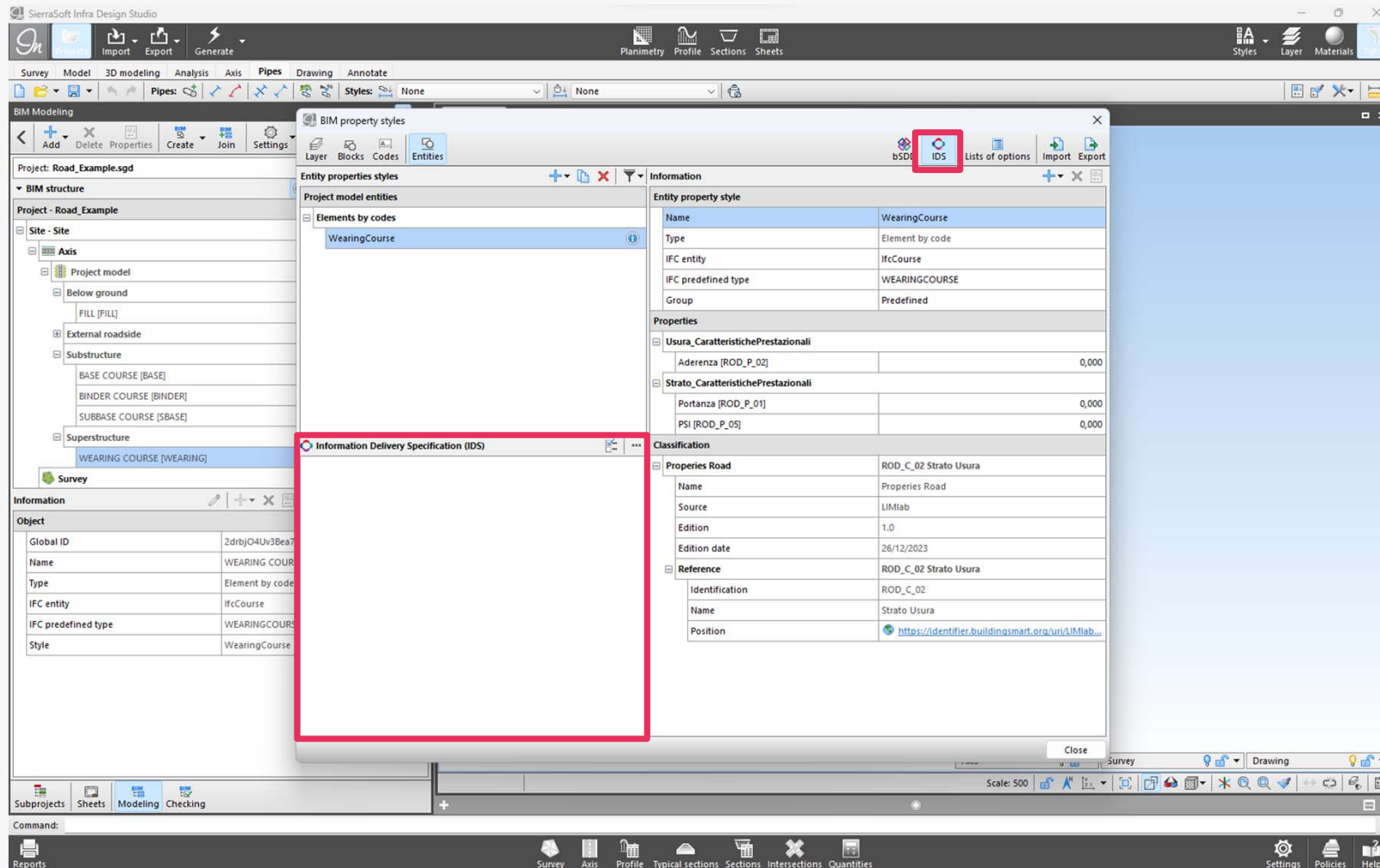
Properties	Value
Property set: Strato_CaratteristichePrestazionali	Portanza
	PSI

Properties Road	Value
Name	ROD_C_02 Strato Usura
Source	Properties Road
Edition	1.0
Edition date	26/12/2023
Reference	ROD_C_02 Strato Usura
Identification	ROD_C_02
Name	Strato Usura
Position	https://identifier.buildingsmart.org/uri/LIMlab...

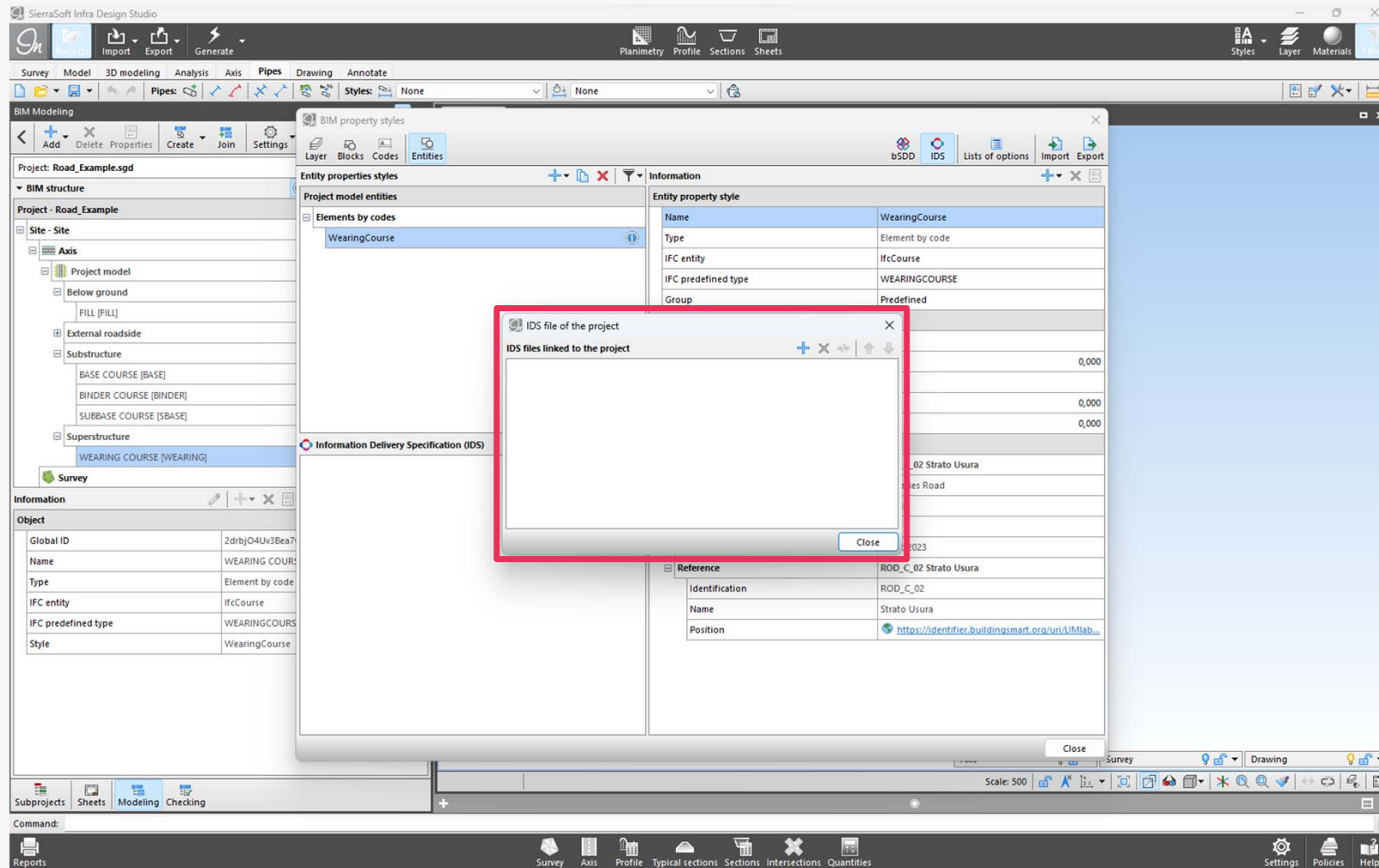
Modellvalidierung und Datenmodellierung mit IDS

Interne Überprüfung und Validierung

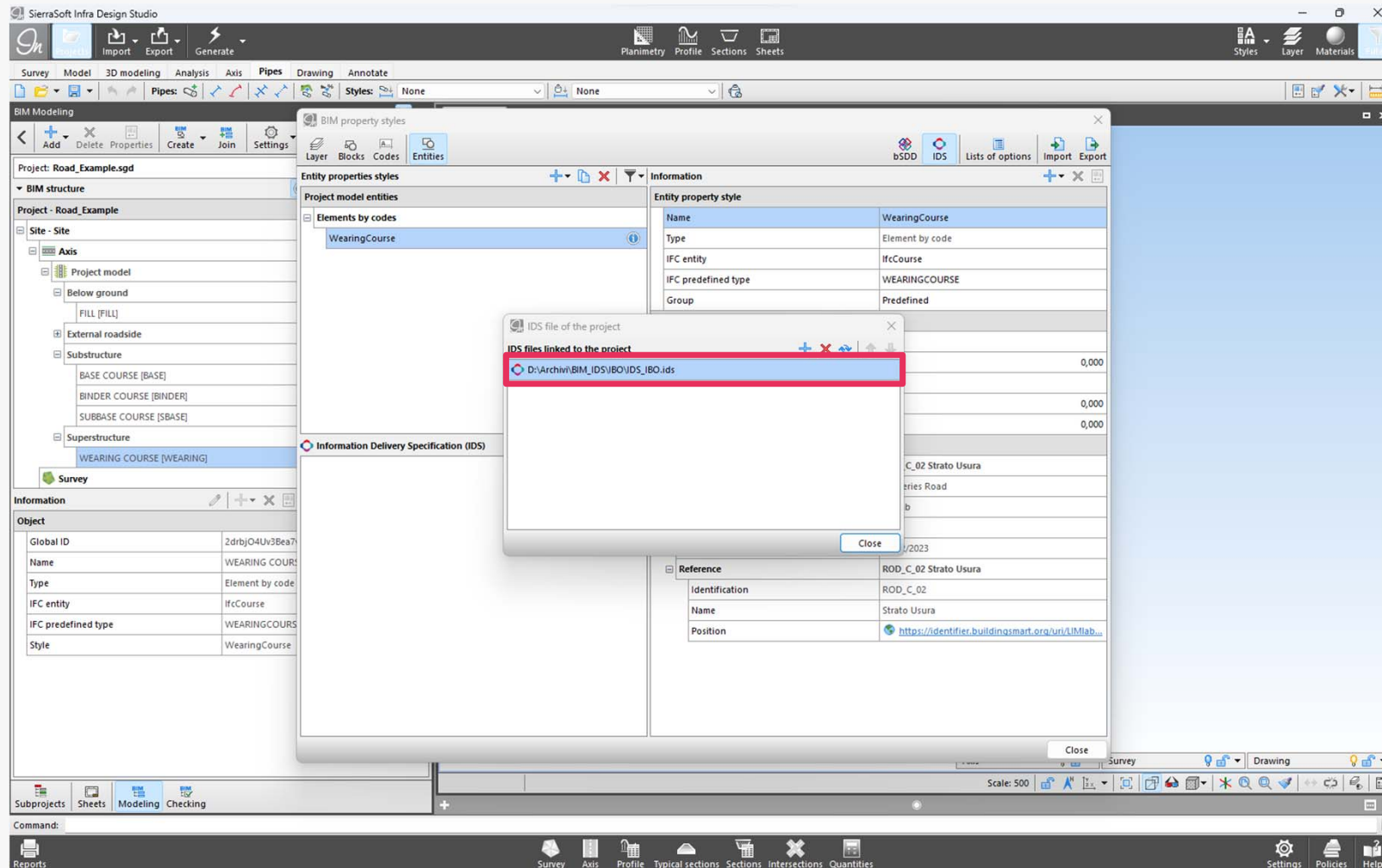
Modellvalidierung und Datenmodellierung mit IDS



Modellvalidierung und Datenmodellierung mit IDS



Modellvalidierung und Datenmodellierung mit IDS



Modellvalidierung und Datenmodellierung mit IDS

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows the 'BIM property styles' dialog, which is used for defining and managing BIM data. The 'Entity properties styles' tab is active, showing a list of 'Project model entities' with 'WearingCourse' selected. The 'Information' tab on the right provides details about the selected entity, including its name, type, IFC entity, IFC predefined type, and group. Below this, the 'Properties' section lists various characteristics like 'Aderenza' and 'Portanza'. The 'Classification' section shows the entity's classification and reference information.

Overlaid on the main window is a smaller dialog titled 'Information Delivery Specification (IDS)'. This dialog displays a list of 'IDS_IBO.ids' and a warning message: 'Checked entity property styles not conforming to the IDS file:'. Below this, the 'Specify: Course WearingCourse' section lists several validation errors:

- Classification not found or wrong: Must be classified as 'IfcCourse' according to the bSDD IFC 4.3
- Property not found: Thickness
- Property not found: Volume

The bottom of the interface shows the 'Command' bar and various tool icons for navigation and editing.

Modellvalidierung und Datenmodellierung mit IDS

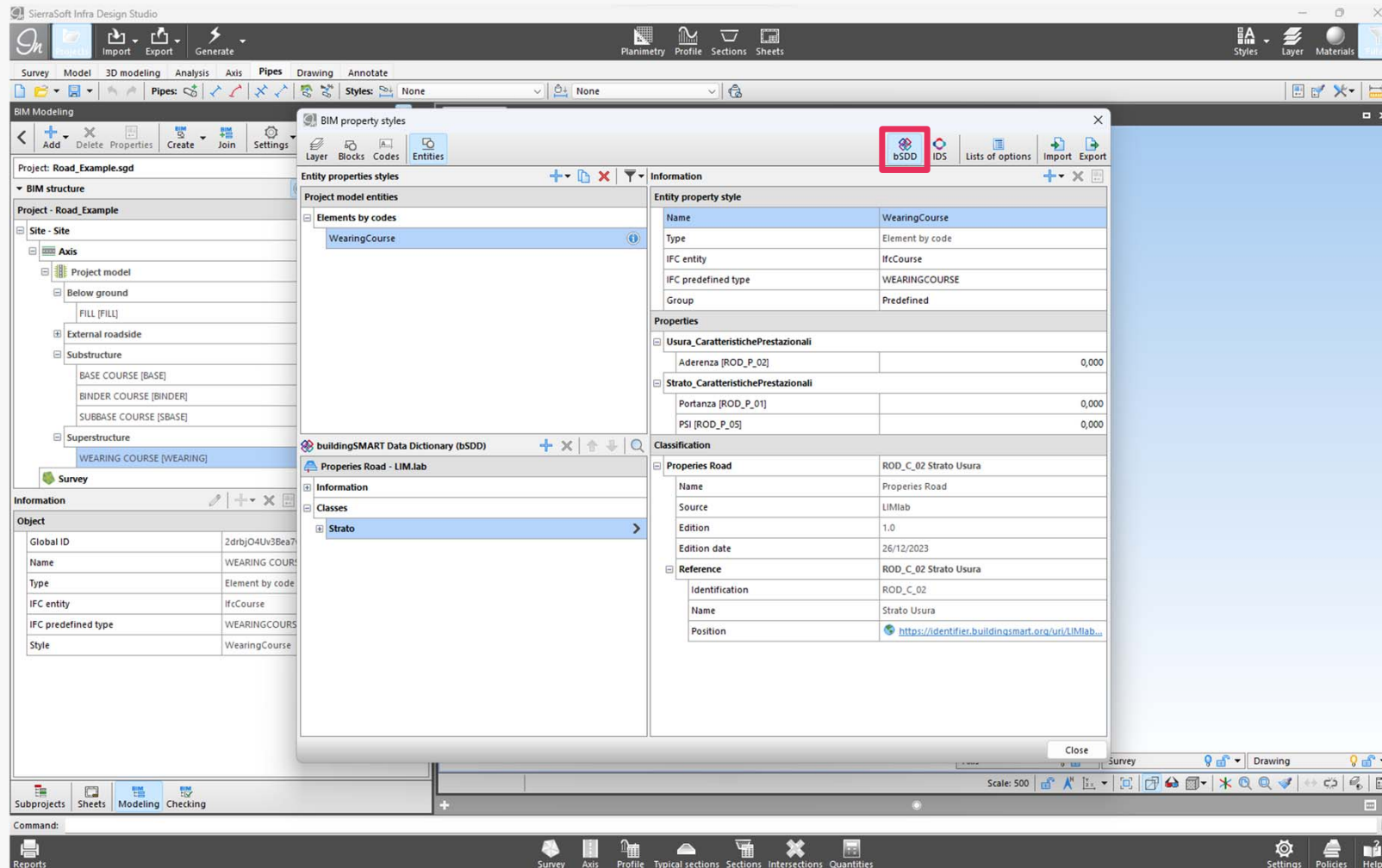
The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows the 'BIM property styles' dialog, which is used for defining and validating BIM entities. The 'Entity properties styles' tab is active, showing a list of 'Project model entities' with 'WearingCourse' selected. The 'Information' tab on the right provides details for the 'WearingCourse' entity, including its name, type, IFC entity, IFC predefined type, and group. The 'Properties' section lists various characteristics like 'Aderenza' and 'Portanza'. The 'Classification' section shows the entity's classification path: 'Properties Road' (ROD_C_02 Strato Usura).

The 'Information Delivery Specification (IDS)' tab is also visible, showing a list of 'IDS_IBO.ids' files. A red box highlights a warning message: 'Classification not found or wrong. Must be classified as 'IfcCourse' according to the bSDD IFC 4.3'. Other warnings include 'Property not found: Thickness' and 'Property not found: Volume'.

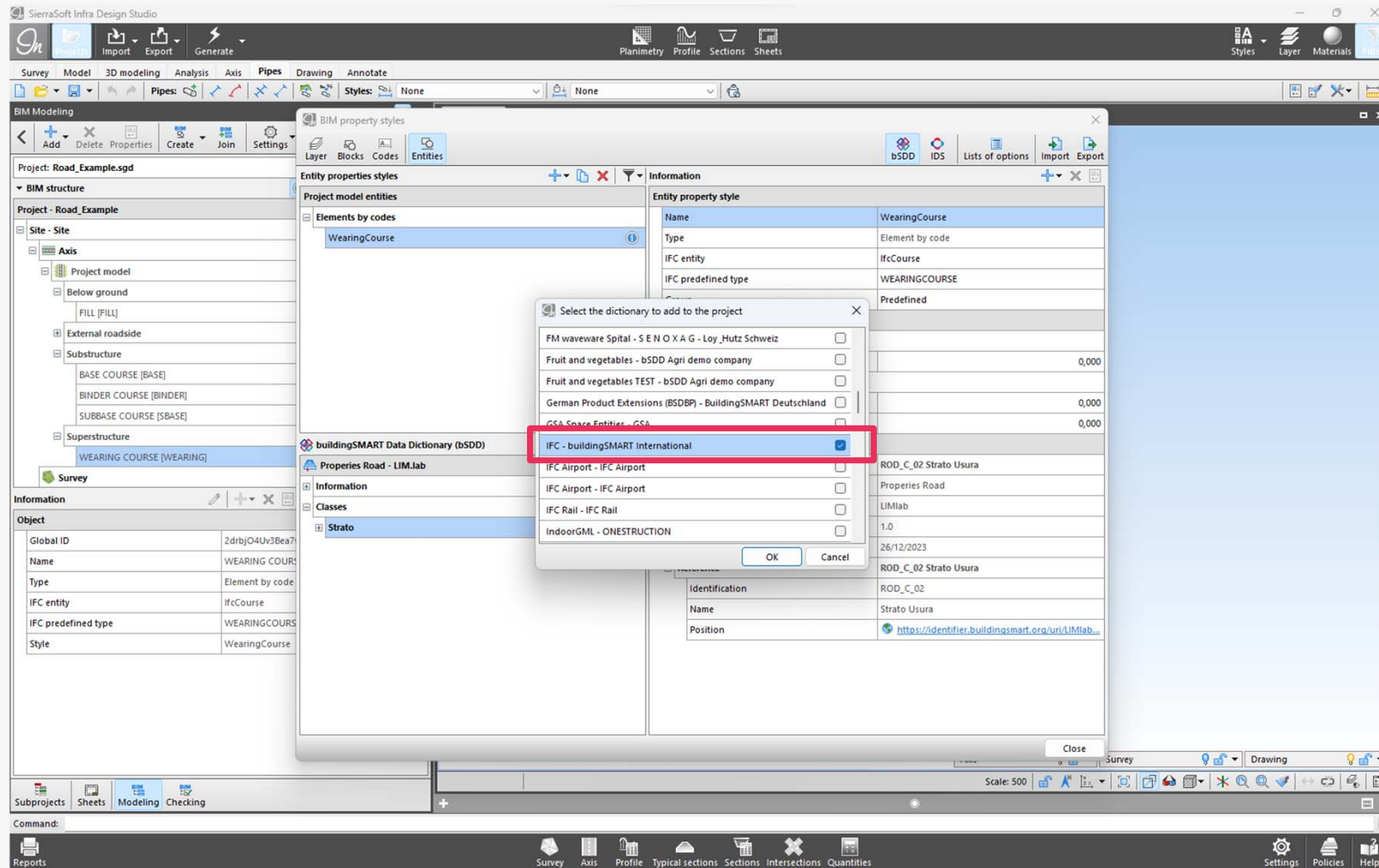
The 'Object' table at the bottom left shows the following data:

Object	Value
Global ID	2drbj04Uv3Bea7
Name	WEARING COUR
Type	Element by code
IFC entity	IfcCourse
IFC predefined type	WEARINGCOURS
Style	WearingCourse

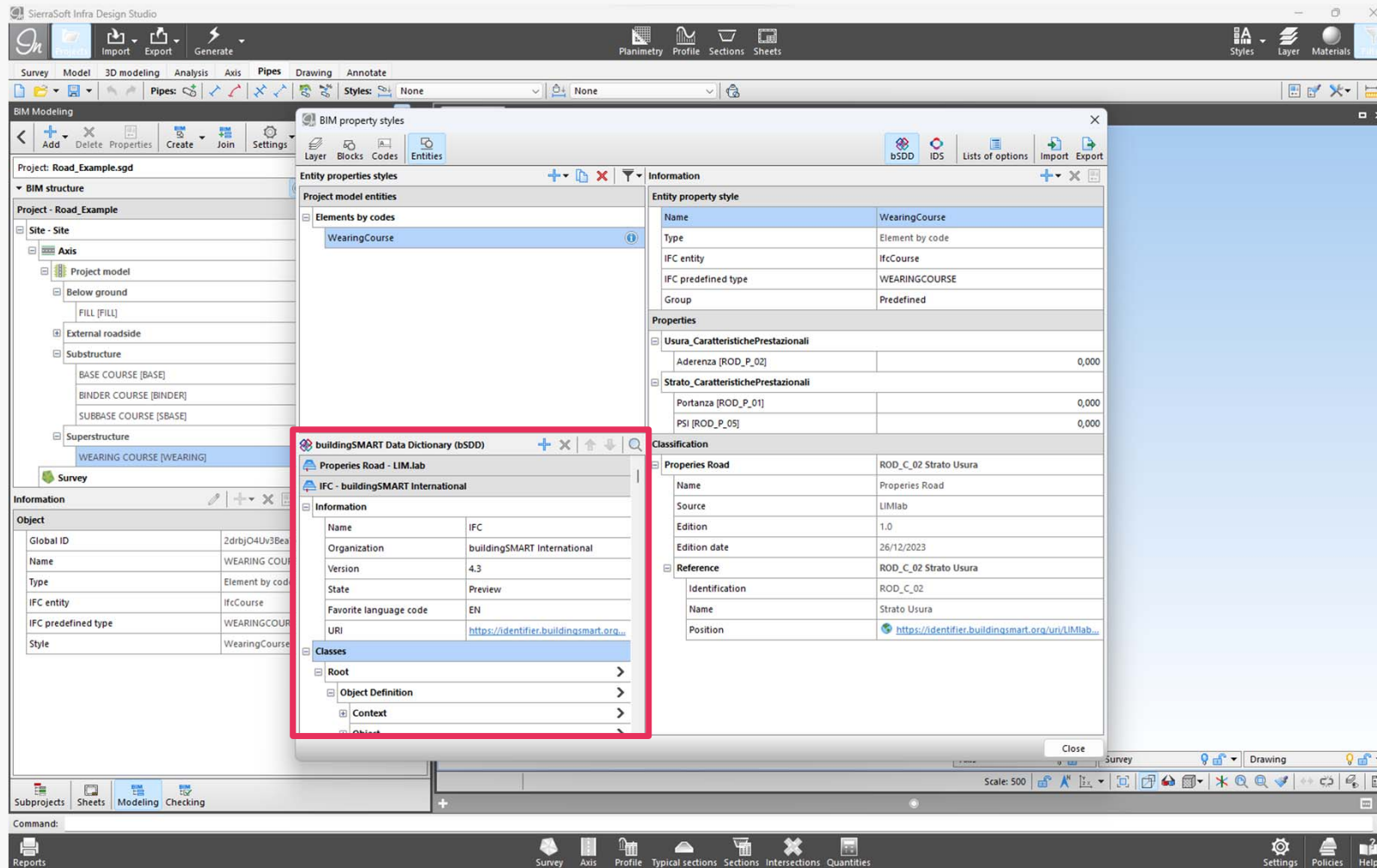
Modellvalidierung und Datenmodellierung mit IDS



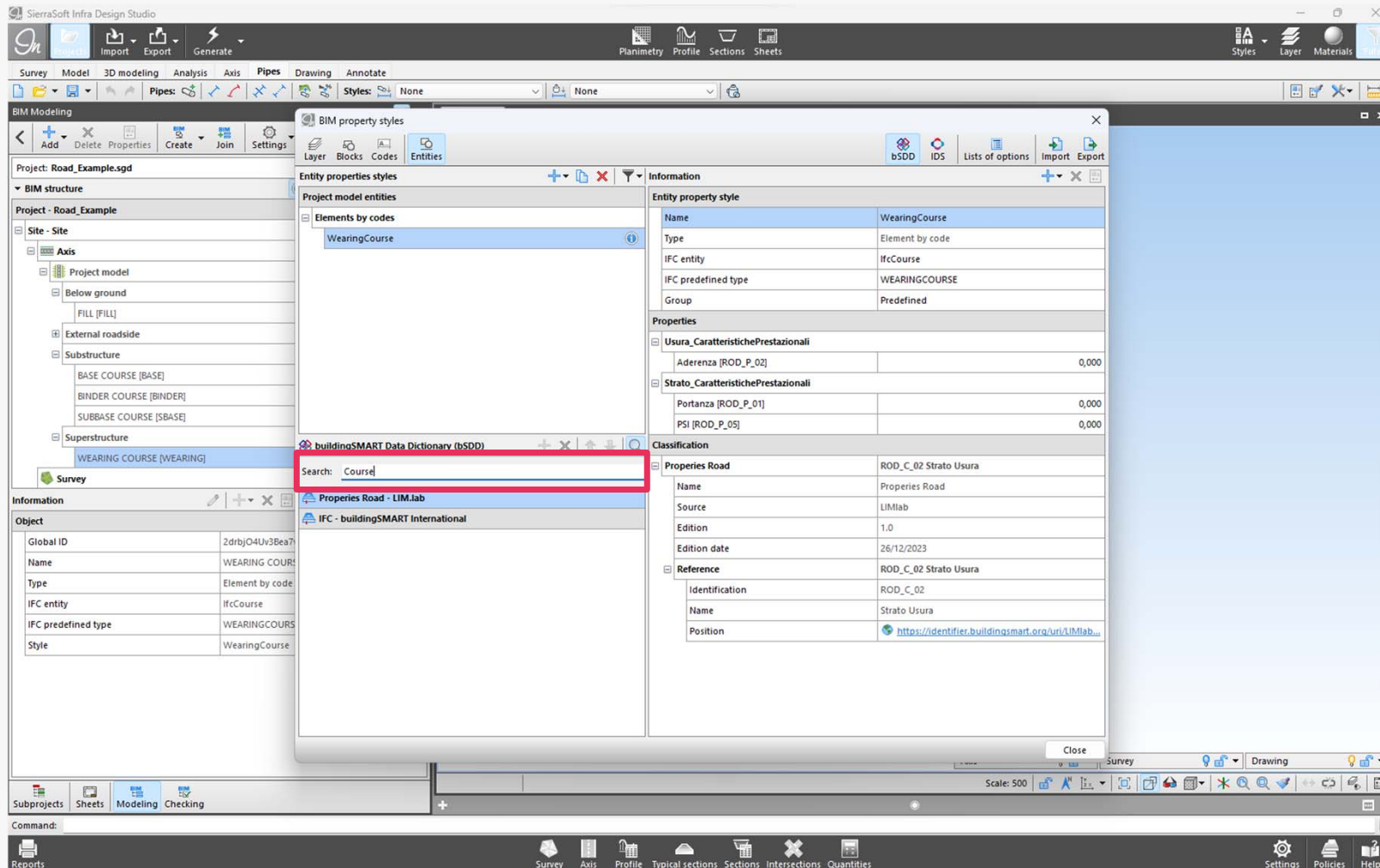
Modellvalidierung und Datenmodellierung mit IDS



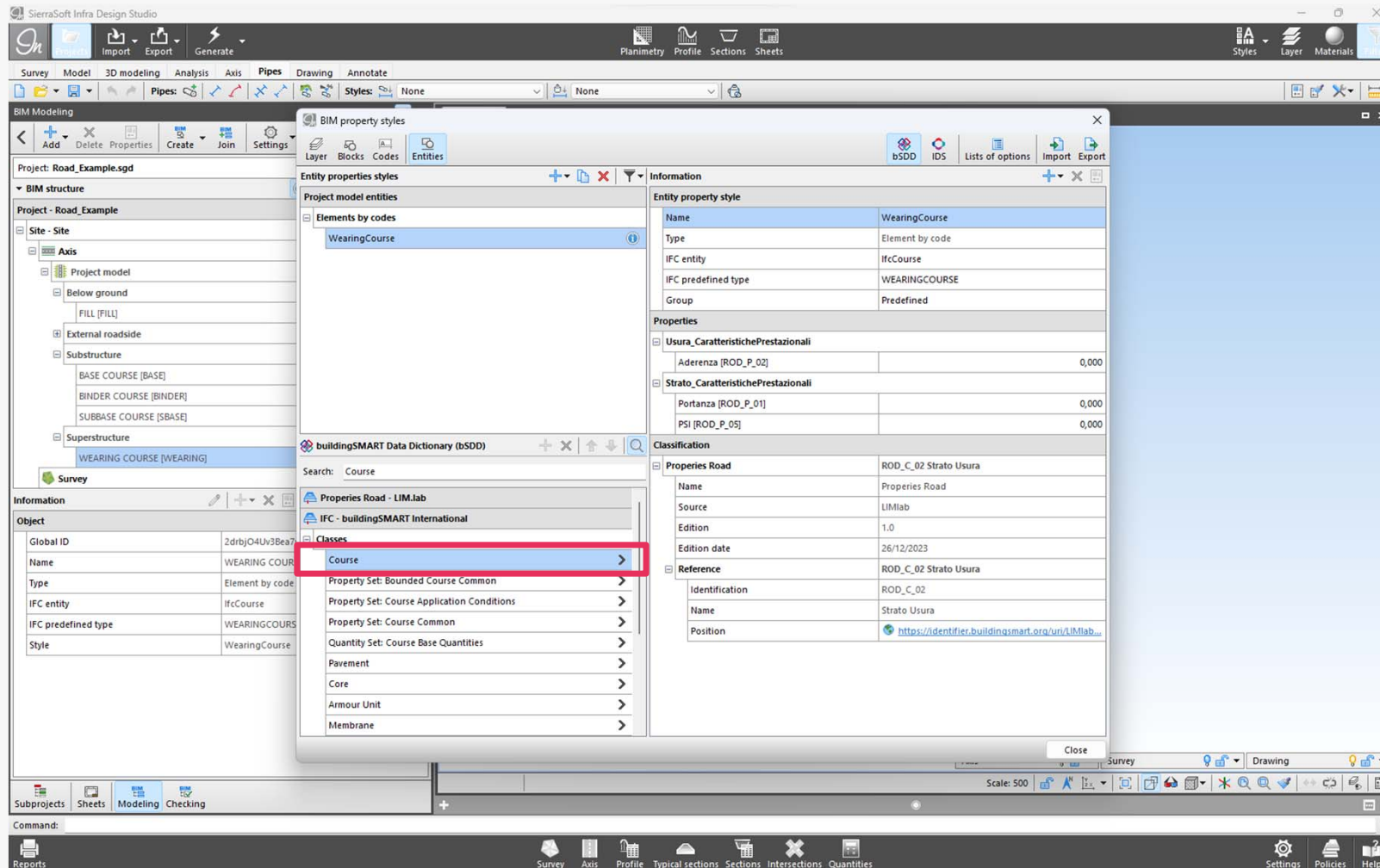
Modellvalidierung und Datenmodellierung mit IDS



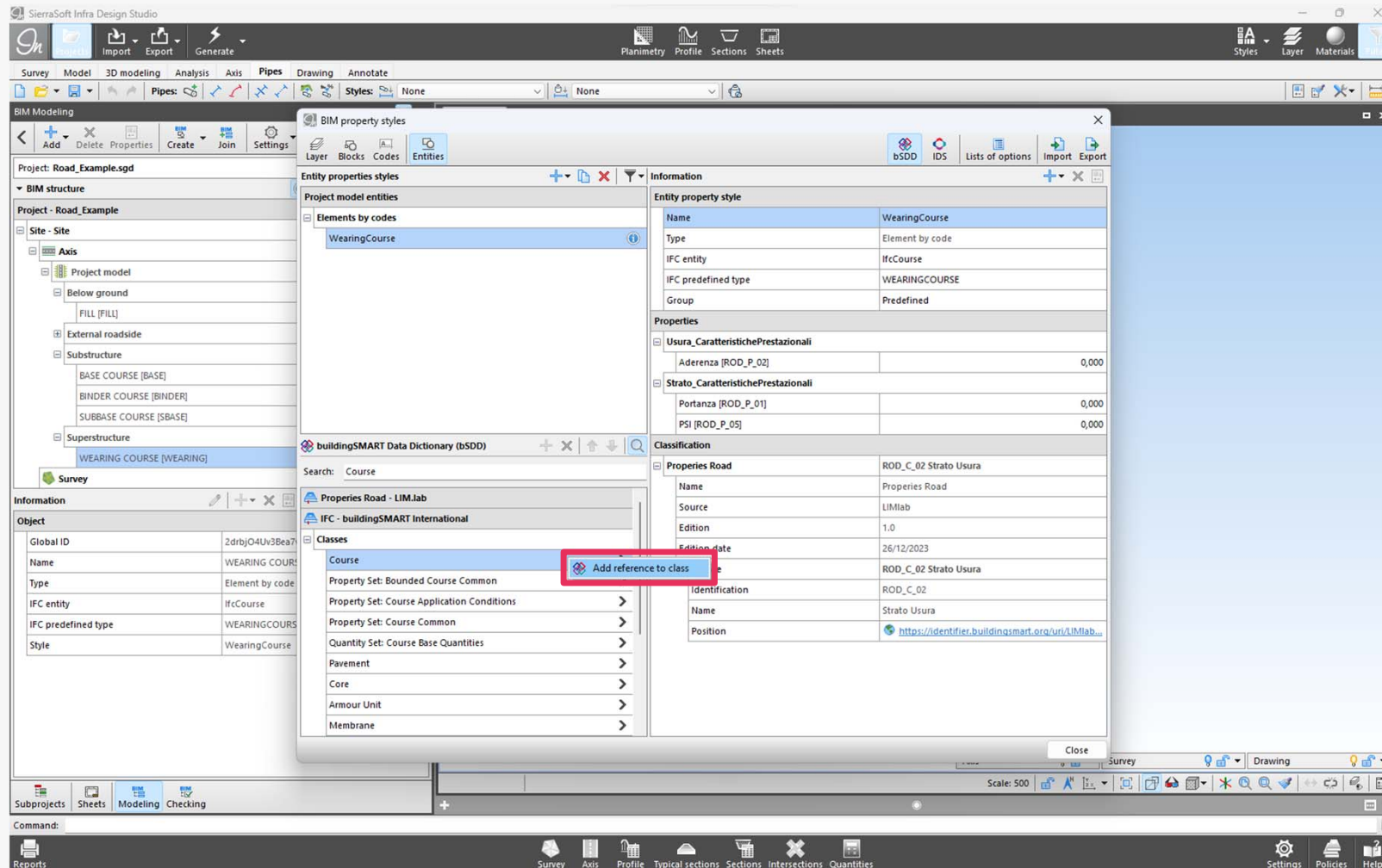
Modellvalidierung und Datenmodellierung mit IDS



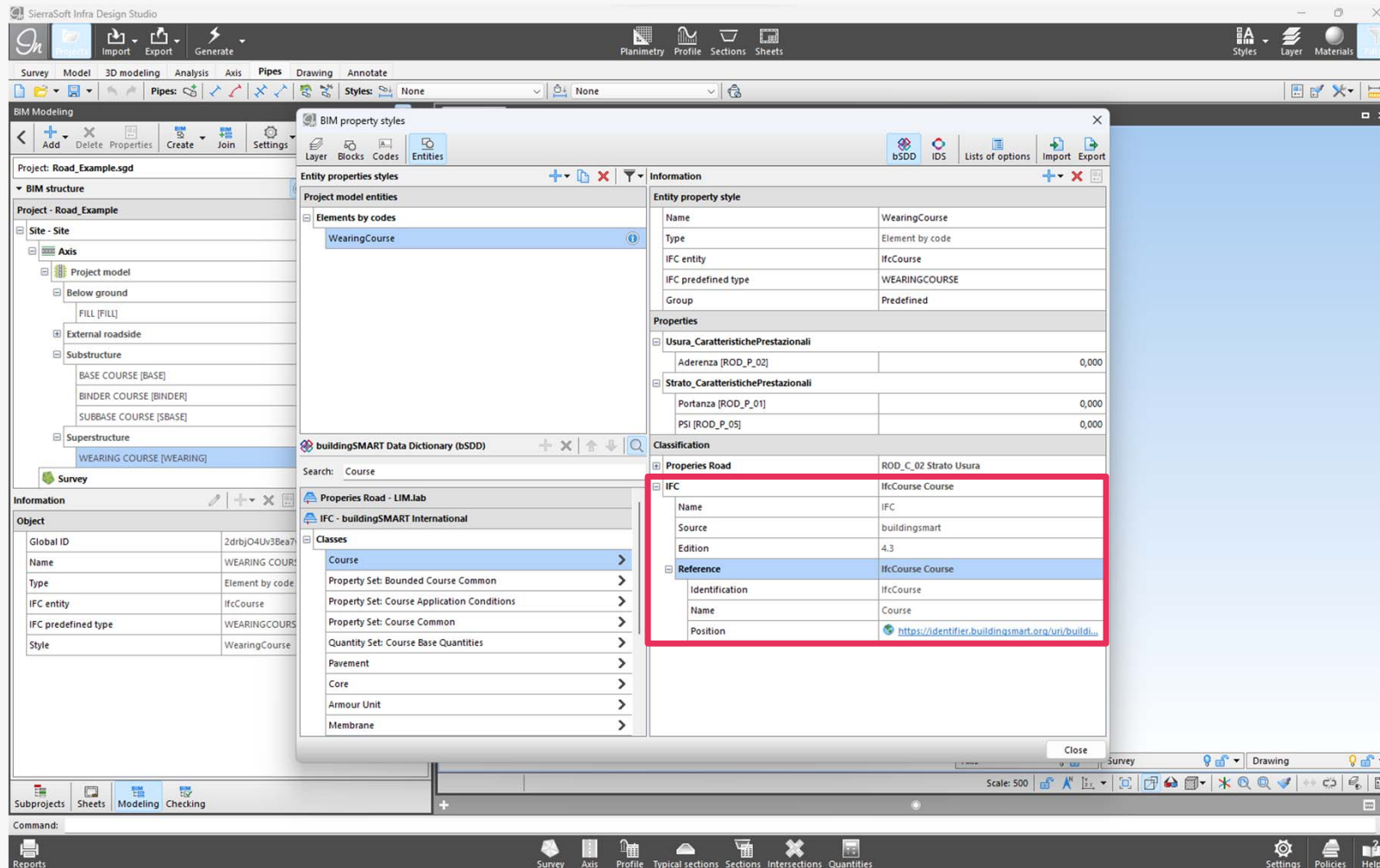
Modellvalidierung und Datenmodellierung mit IDS



Modellvalidierung und Datenmodellierung mit IDS



Modellvalidierung und Datenmodellierung mit IDS



Modellvalidierung und Datenmodellierung mit IDS

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project named 'Road_Example.sgd' with a BIM structure tree on the left. The 'WearingCourse' entity is selected. A 'BIM property styles' dialog is open, showing the 'Entity properties styles' tab. The 'WearingCourse' entity is selected, and its properties are listed in the 'Information' pane. The 'IDS_IBO.ids' file is highlighted in the 'Information Delivery Specification (IDS)' pane. The 'Checked entity property styles not conforming to the IDS file:' section lists two errors: 'Property not found: Thickness' and 'Property not found: Volume'. The 'Properties Road' section shows the 'WearingCourse' entity with its properties: Name (WearingCourse), Type (Element by code), IFC entity (IfcCourse), IFC predefined type (WEARINGCOURSE), and Group (Predefined). The 'Reference' section shows the 'IfcCourse Course' entity with its properties: Identification (IfcCourse), Name (Course), and Position (https://identifier.buildingsmart.org/uri/buildi...).

BIM property styles

Entity properties styles

Project model entities

Elements by codes

WearingCourse

Information

Entity property style

Name	WearingCourse
Type	Element by code
IFC entity	IfcCourse
IFC predefined type	WEARINGCOURSE
Group	Predefined

Properties

Usura_CaratteristichePrestazionali

Aderenza [ROD_P_02]	0,000
---------------------	-------

Strato_CaratteristichePrestazionali

Portanza [ROD_P_01]	0,000
PSI [ROD_P_05]	0,000

Classification

Properties Road

ROD_C_02 Strato Usura

IFC

Name	IfcCourse Course
Source	buildingsmart
Edition	4.3

Reference

Identification	IfcCourse
Name	Course
Position	https://identifier.buildingsmart.org/uri/buildi...

Information Delivery Specification (IDS)

IDS_IBO.ids

Checked entity property styles not conforming to the IDS file:

- WearingCourse
- Specify: Course WearingCourse
 - Property not found: Thickness
 - Property not found: Volume

Modellvalidierung und Datenmodellierung mit IDS

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project named 'Road_Example.sgd' with a BIM structure tree on the left. The 'WearingCourse' entity is selected in the tree. The 'BIM property styles' dialog is open, showing the 'Entity properties styles' tab. The 'WearingCourse' entity is selected, and the 'Information Delivery Specification (IDS)' tab is active. The 'IDS_IBO.ids' file is loaded, and the 'Checked entity property styles not conforming to the IDS file:' section lists two errors: 'Property not found: Thickness' and 'Property not found: Volume'. The 'Specify: Course: WearingCourse' section is highlighted with a red box. The 'Information' tab on the right shows the 'Entity property style' details for 'WearingCourse', including Name, Type, IFC entity, IFC predefined type, Group, Properties, and Classification.

Entity properties styles

Project model entities

Elements by codes

WearingCourse

Information Delivery Specification (IDS)

IDS_IBO.ids

Checked entity property styles not conforming to the IDS file:

- Property not found: Thickness
- Property not found: Volume

Specify: Course: WearingCourse

Information

Entity property style

Name	WearingCourse
Type	Element by code
IFC entity	IfcCourse
IFC predefined type	WEARINGCOURSE
Group	Predefined

Properties

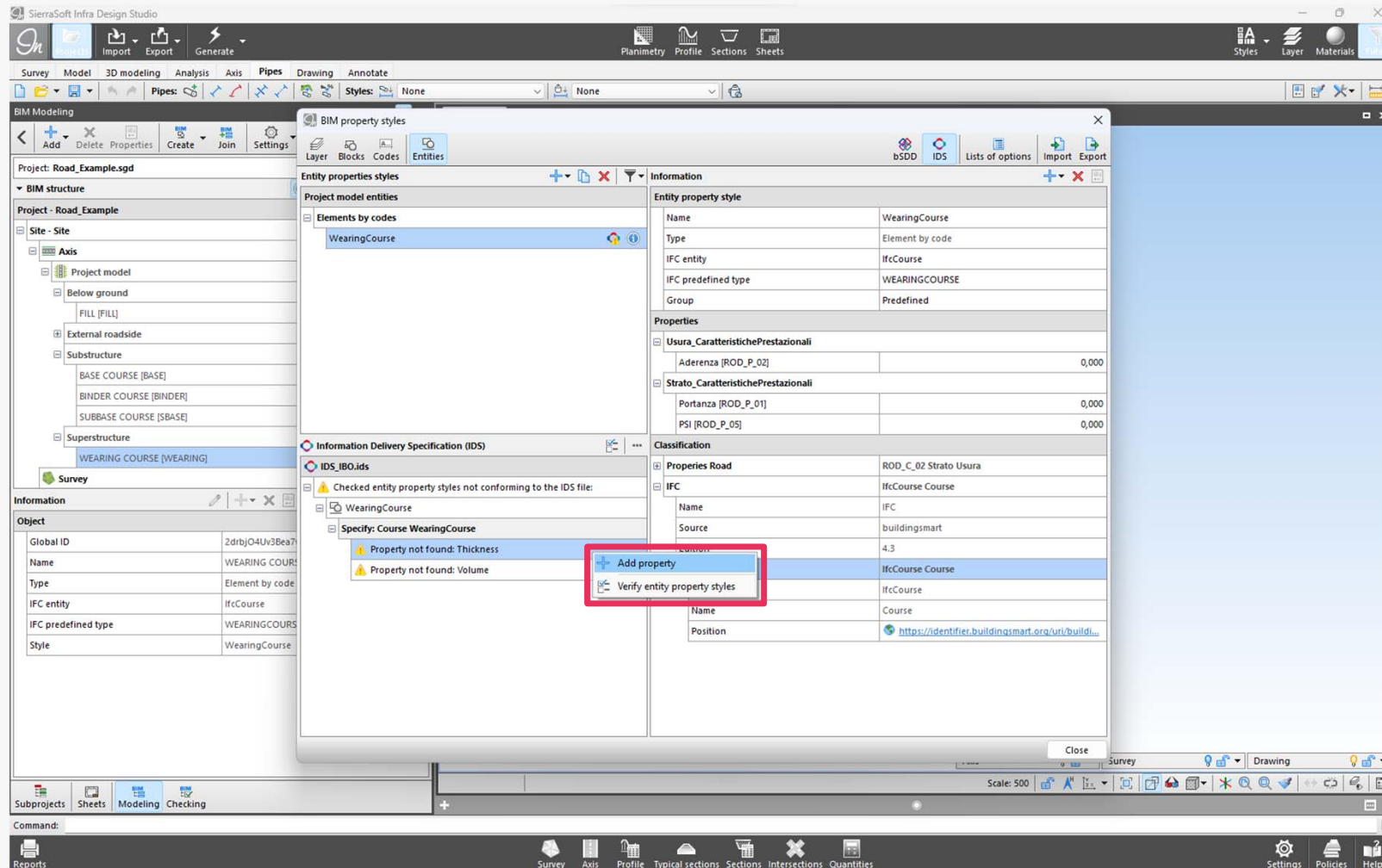
Usura_CaratteristichePrestazionali	
Aderenza [ROD_P_02]	0,000

Strato_CaratteristichePrestazionali	
Portanza [ROD_P_01]	0,000
PSI [ROD_P_05]	0,000

Classification

Properties Road	ROD_C_02 Strato Usura
IFC	IfcCourse Course
Name	IFC
Source	buildingsmart
Edition	4.3
Reference	IfcCourse Course
Identification	IfcCourse
Name	Course
Position	https://identifier.buildingsmart.org/uri/buildi...

Modellvalidierung und Datenmodellierung mit IDS



Modellvalidierung und Datenmodellierung mit IDS

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows the 'BIM property styles' dialog box, which is used for defining and validating BIM data. The 'Entity properties styles' tab is active, showing a list of 'Project model entities' with 'WearingCourse' selected. The 'Information' tab on the right provides details about the selected entity, including its name, type, IFC entity, IFC predefined type, and group. The 'Properties' section lists various characteristics, such as 'Usura_CaratteristichePrestazionali' and 'Strato_CaratteristichePrestazionali'. The 'Classification' section shows the entity's classification path: 'Properties Road' (ROD_C_02 Strato Usura) and 'IFC' (IfcCourse Course). A red box highlights the 'Thickness [IFCPROPERTYSINGLEVALUE]' property, which is set to 0.000. A warning message is displayed below the list: 'Wrong property value: Thickness. The value must be between 0.02 and 0.07. Property not found: Volume.' The 'Information Delivery Specification (IDS)' tab is also visible, showing a list of IDS files and a warning message: 'Checked entity property styles not conforming to the IDS file: WearingCourse'.

SierraSoft Infra Design Studio

Project: Road_Example.sgd

BIM structure

Project - Road_Example

Site - Site

Axis

Project model

Below ground

FILL [FILL]

External roadside

Substructure

BASE COURSE [BASE]

BINDER COURSE [BINDER]

SUBBASE COURSE [SBASE]

Superstructure

WEARING COURSE [WEARING]

Survey

Information

Object

Global ID: 2drbj04Uv38ea7

Name: WEARING COURSE

Type: Element by code

IFC entity: IfcCourse

IFC predefined type: WEARINGCOURSE

Style: WearingCourse

BIM property styles

Entity properties styles

Project model entities

Elements by codes

WearingCourse

Information

Entity property style

Name: WearingCourse

Type: Element by code

IFC entity: IfcCourse

IFC predefined type: WEARINGCOURSE

Group: Predefined

Properties

Usura_CaratteristichePrestazionali

Aderenza [ROD_P_02]: 0,000

Strato_CaratteristichePrestazionali

Portanza [ROD_P_01]: 0,000

PSI [ROD_P_05]: 0,000

Qto_CourseBaseQuantities

Thickness [IFCPROPERTYSINGLEVALUE]: 0,000

Classification

Properties Road: ROD_C_02 Strato Usura

IFC: IfcCourse Course

Checked entity property styles not conforming to the IDS file:

WearingCourse

Wrong property value: Thickness

The value must be between 0.02 and 0.07

Property not found: Volume

Scale: 500

Subprojects: Sheets: Modeling: Checking

Command:

Reports

Survey: Axis: Profile: Typical sections: Sections: Intersections: Quantities

Settings: Policies: Help

Modellvalidierung und Datenmodellierung mit IDS

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows the 'BIM property styles' dialog box, which is used for defining and validating BIM data. The 'Entity properties styles' tab is active, showing a list of 'Project model entities' with 'WearingCourse' selected. The 'Information' tab on the right provides details about the selected entity, including its name, type, IFC entity, IFC predefined type, and group. The 'Properties' section lists various characteristics, such as 'Usura_CaratteristichePrestazionali' and 'Strato_CaratteristichePrestazionali'. The 'Classification' section shows the entity's classification path: 'Properties Road' (ROD_C_02 Strato Usura) and 'IFC' (IfcCourse Course). The 'IDS_IBO.ids' section highlights a validation error for the 'Thickness' property, indicating that the value must be between 0.02 and 0.07. The 'Object' table on the left shows the entity's global ID, name, type, IFC entity, IFC predefined type, and style.

Entity properties styles	Information
Project model entities	Entity property style
Elements by codes	Name: WearingCourse
WearingCourse	Type: Element by code
	IFC entity: IfcCourse
	IFC predefined type: WEARINGCOURSE
	Group: Predefined
	Properties
	Usura_CaratteristichePrestazionali
	Aderenza [ROD_P_02]: 0,000
	Strato_CaratteristichePrestazionali
	Portanza [ROD_P_01]: 0,000
	PSI [ROD_P_05]: 0,000
	Qto_CourseBaseQuantities
	Thickness [IFCPROPERTYSINGLEVALUE]: 0,05
	Classification
	Properties Road : ROD_C_02 Strato Usura
	IFC : IfcCourse Course

Object
Global ID: 2drbj04Uv38ea7
Name: WEARING COURSE
Type: Element by code
IFC entity: IfcCourse
IFC predefined type: WEARINGCOURSE
Style: WearingCourse

Modellvalidierung und Datenmodellierung mit IDS

The screenshot displays the SierraSoft Infra Design Studio interface. The main window shows a project named 'Road_Example.sgd' with a BIM structure tree on the left. The 'WearingCourse' entity is selected. A 'BIM property styles' dialog box is open, showing the 'Entity properties styles' tab. The 'WearingCourse' entity is selected, and its properties are listed in the 'Information' pane. The 'Information Delivery Specification (IDS)' pane shows a warning: 'Checked entity property styles not conforming to the IDS file:'. The 'Specify Course WearingCourse' pane shows a warning: 'Property not found: Volume'. The 'Classification' pane shows the 'Properties Road' and 'IFC' classification details.

Entity properties styles

Entity properties styles	Information
Project model entities	Entity property style
Elements by codes	Name
WearingCourse	Type
	IFC entity
	IFC predefined type
	Group
	Properties
	Usura_CaratteristichePrestazionali
	Aderenza [ROD_P_02]
	Strato_CaratteristichePrestazionali
	Portanza [ROD_P_01]
	PSI [ROD_P_05]
	Qto_CourseBaseQuantities
	Thickness [IFCPROPERTYSINGLEVALUE]
	Classification
	Properties Road
	IFC

Information Delivery Specification (IDS)

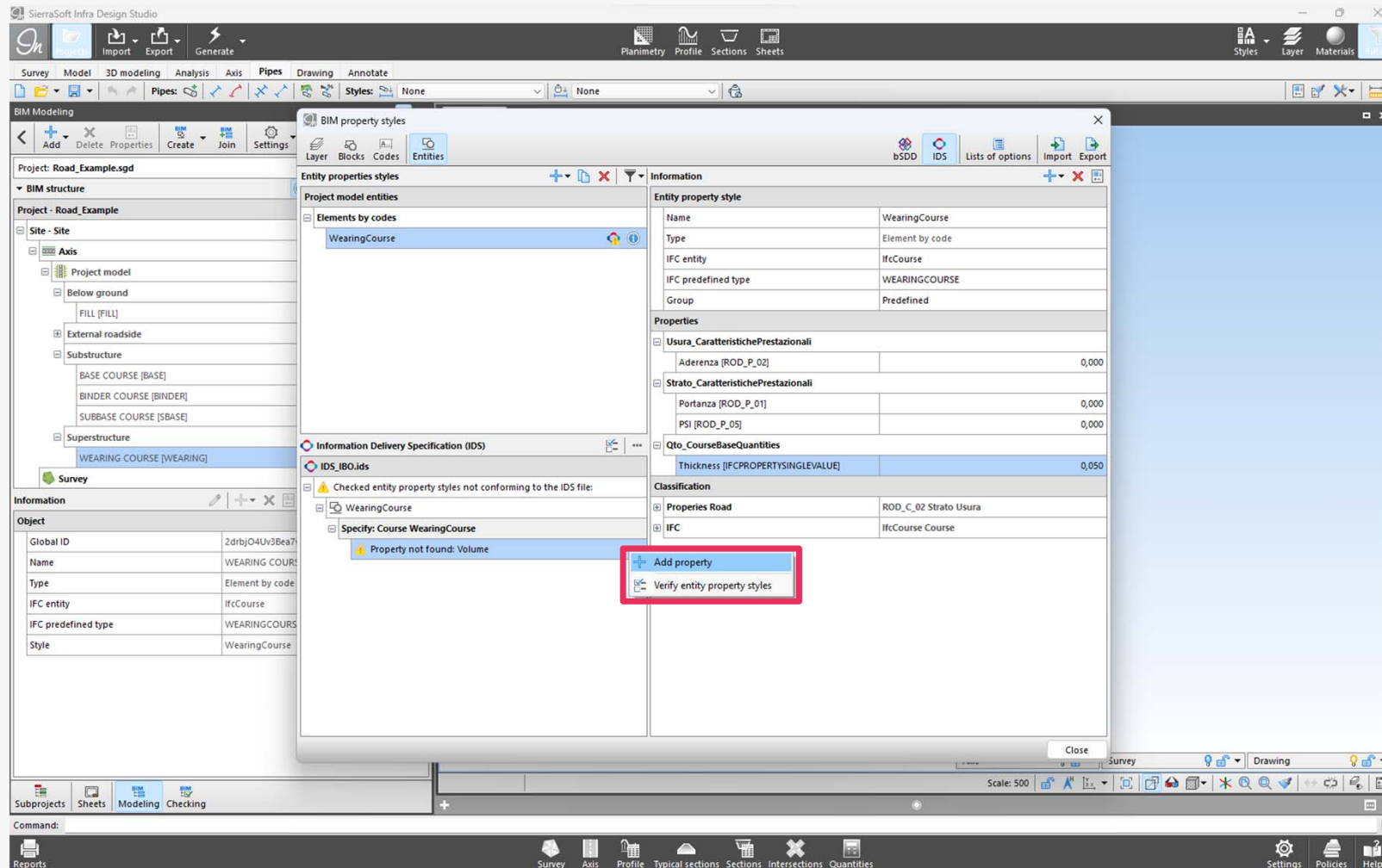
Checked entity property styles not conforming to the IDS file:

- WearingCourse
- Specify Course WearingCourse
- Property not found: Volume

Classification

Classification	Properties Road
Properties Road	ROD_C_02 Strato Usura
IFC	IfcCourse Course

Modellvalidierung und Datenmodellierung mit IDS



Modellvalidierung und Datenmodellierung mit IDS

SierraSoft Infra Design Studio

Project: Road_Example.sgd

BIM Modeling

Project - Road_Example

Site - Site

Axis

Project model

Below ground

FILL [FILL]

External roadside

Substructure

BASE COURSE [BASE]

BINDER COURSE [BINDER]

SUBBASE COURSE [SBASE]

Superstructure

WEARING COURSE [WEARING]

Survey

Information

Object

Global ID: 2drbjO4Uv3Bea7

Name: WEARING COURSE

Type: Element by code

IFC entity: IfcCourse

IFC predefined type: WEARINGCOURSE

Style: WearingCourse

BIM property styles

Entity properties styles

Project model entities

Elements by codes

WearingCourse

Information Delivery Specification (IDS)

IDS IBO.ids

Checked entity property styles conforming to the IDS file:

WearingCourse

Entity property style

Name: WearingCourse

Type: Element by code

IFC entity: IfcCourse

IFC predefined type: WEARINGCOURSE

Group: Predefined

Properties

Usura_CaratteristichePrestazionali

Aderenza [ROD_P_02]: 55,000

Strato_CaratteristichePrestazionali

Portanza [ROD_P_01]: 450,000

PSI [ROD_P_05]: 2,500

Qto_CourseBaseQuantities

Thickness [IFCPROPERTY SINGLE VALUE]: 0.050

Volume: [VOLUME]

Classification

Properties Road: ROD_C_02 Strato Usura

IFC: IfcCourse Course

Scale: 500

Subprojects: Sheets: Modeling: Checking

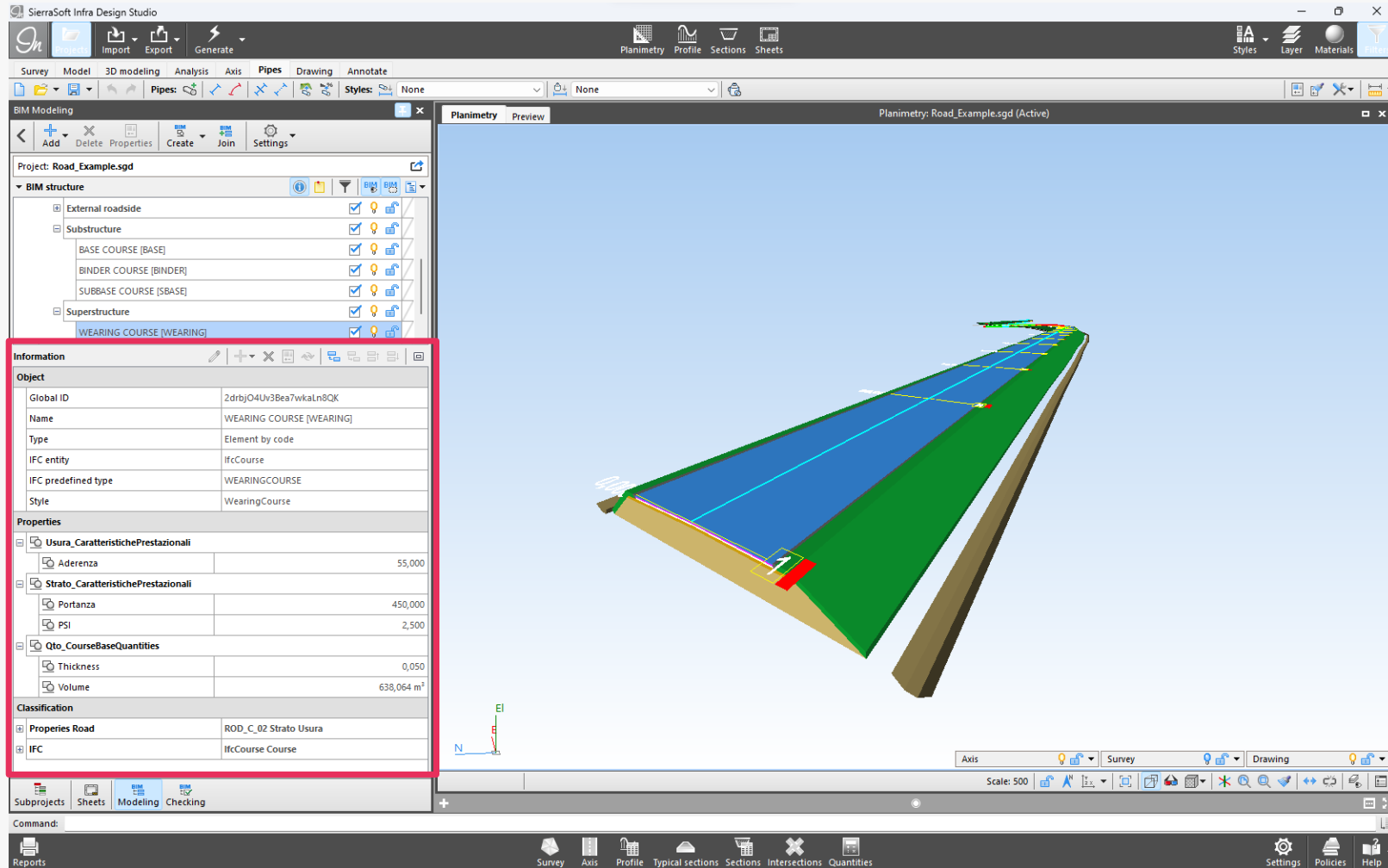
Command:

Reports

Survey: Axis: Profile: Typical sections: Sections: Intersections: Quantities

Settings: Policies: Help

Modellvalidierung und Datenmodellierung mit IDS

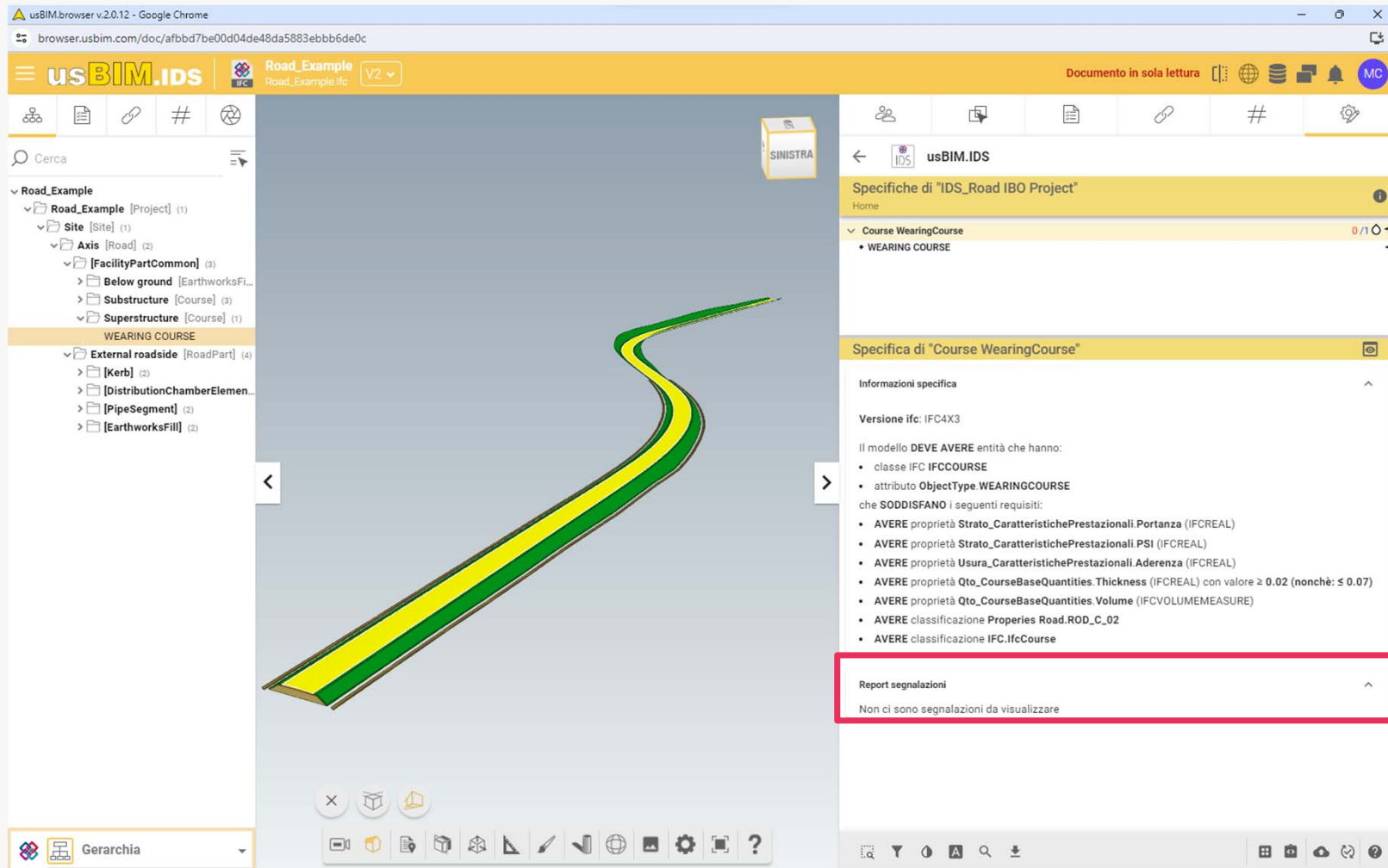


Erstellung und Bereitstellung von IFC



Modellvalidierung mit IDS (durch den Auftraggeber)

Modellvalidierung mit IDS (durch den Auftraggeber)



Schlussfolgerungen

Schlussfolgerungen

Die höchste Optimierungsstufe wird erreicht, wenn IDS und bSDD durch parametrische Informationsmodellierung in die Planung integriert werden.

In diesem Fall erhalten wir:

- Kosteneinsparungen bei der Erstellung von Informationsmodellen und der Planung der Infrastruktur
- Kosteneinsparungen bei der Änderung von Informationsinhalten
- Keine zusätzlichen Kosten bei der Neugestaltung des Informationsmodells bei Planungsänderungen
- Weniger Fehler bei der Planung und bei der Informationsmodellierung
- Geringere Arbeitsbelastung des BIM-Koordinators
- Vereinfachung und Optimierung des gesamten BIM-Arbeitsablaufs

Mit den richtigen Werkzeugen sollte und kann der Planer die Planung mit der Informationsmodellierung verbinden.

Steigerung der Effektivität von BIM-Infrastrukturplanungen mit IFC, IDS und bSDD

Vielen Dank, für Ihre Aufmerksamkeit!

Wir freuen uns auch auf Ihren Besuch auf unserem Stand 232



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JWS GmbH

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SierraSoft

BIM-Softwarelösungen für
Vermessung und Infrastruktur

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