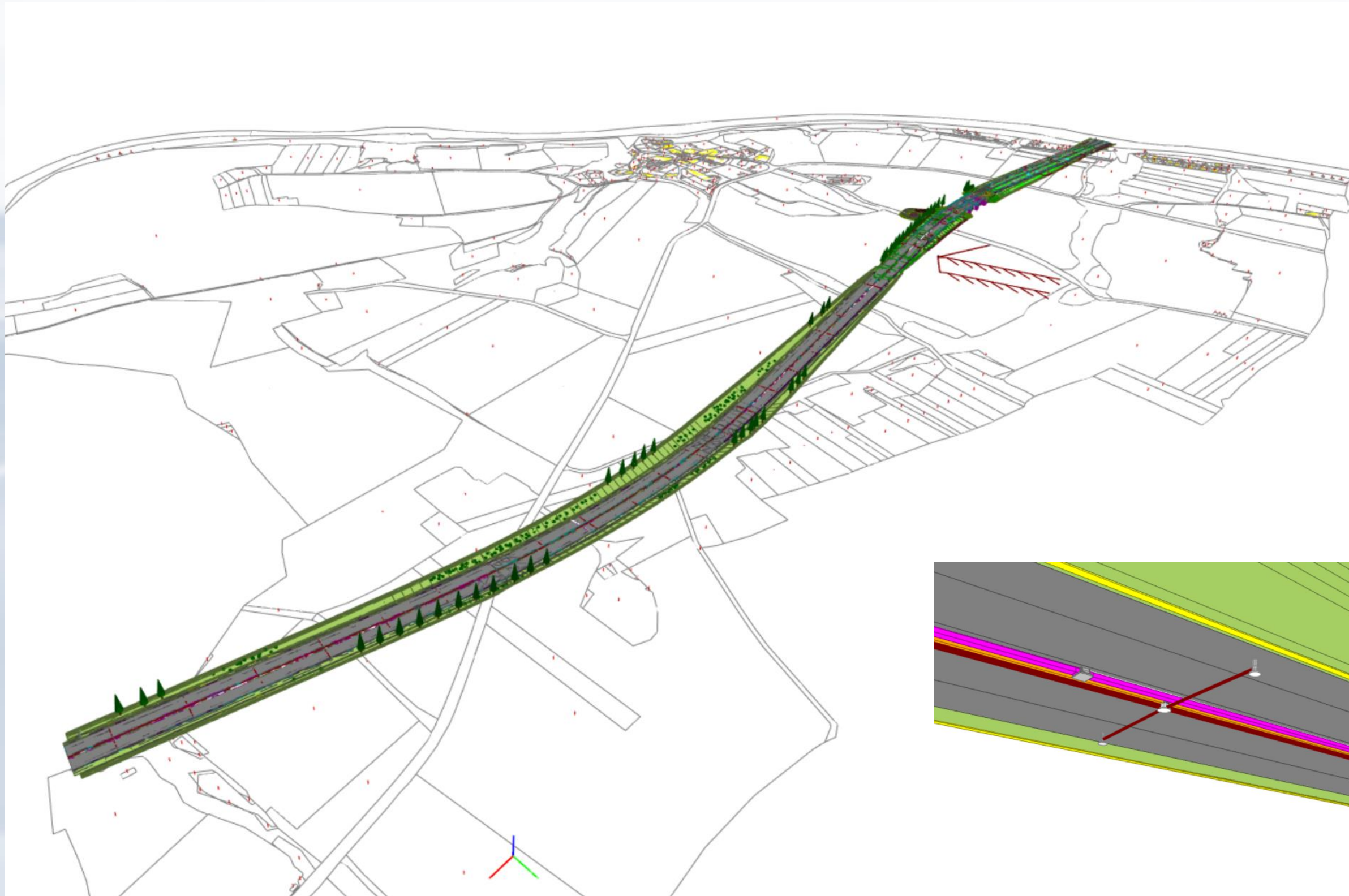


# BIM A GIS V SILNIČNÍCH STAVBÁCH

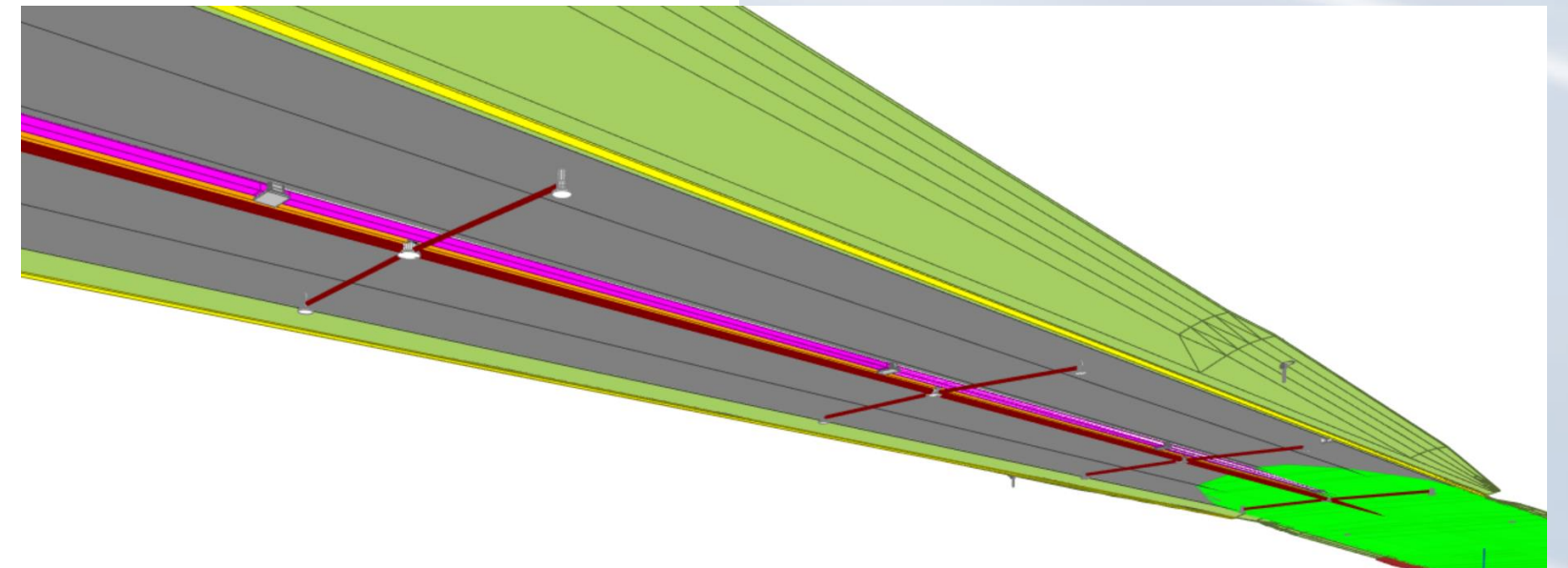
2.11.2022



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- BIM a GIS rozdílné světy, rozdílné užití informací, společný výsledek
- Návrh, Výstavba, Provoz
- Činnosti tvořící svět kolem nás

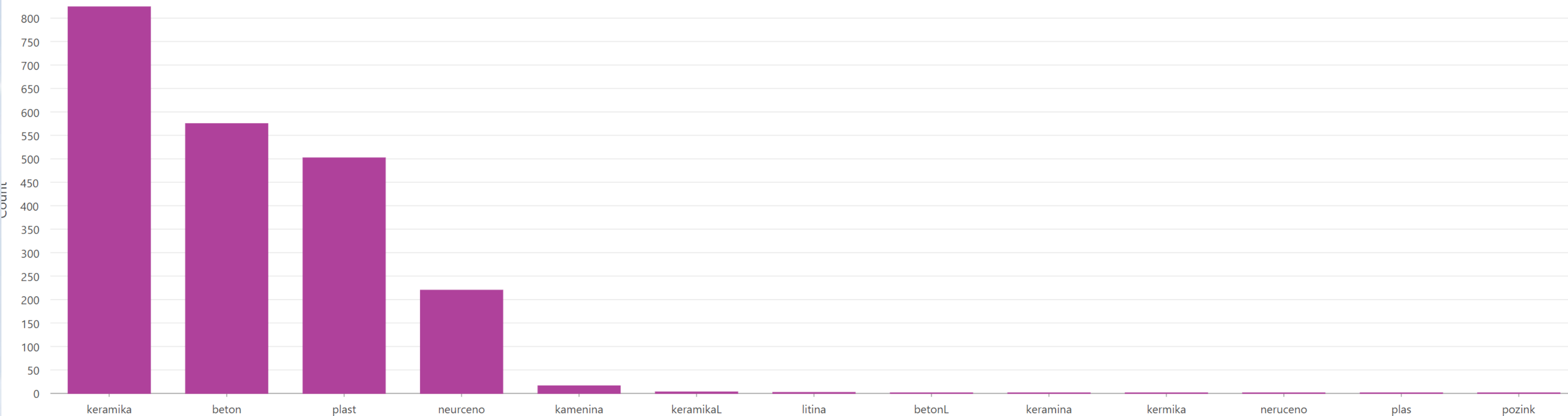


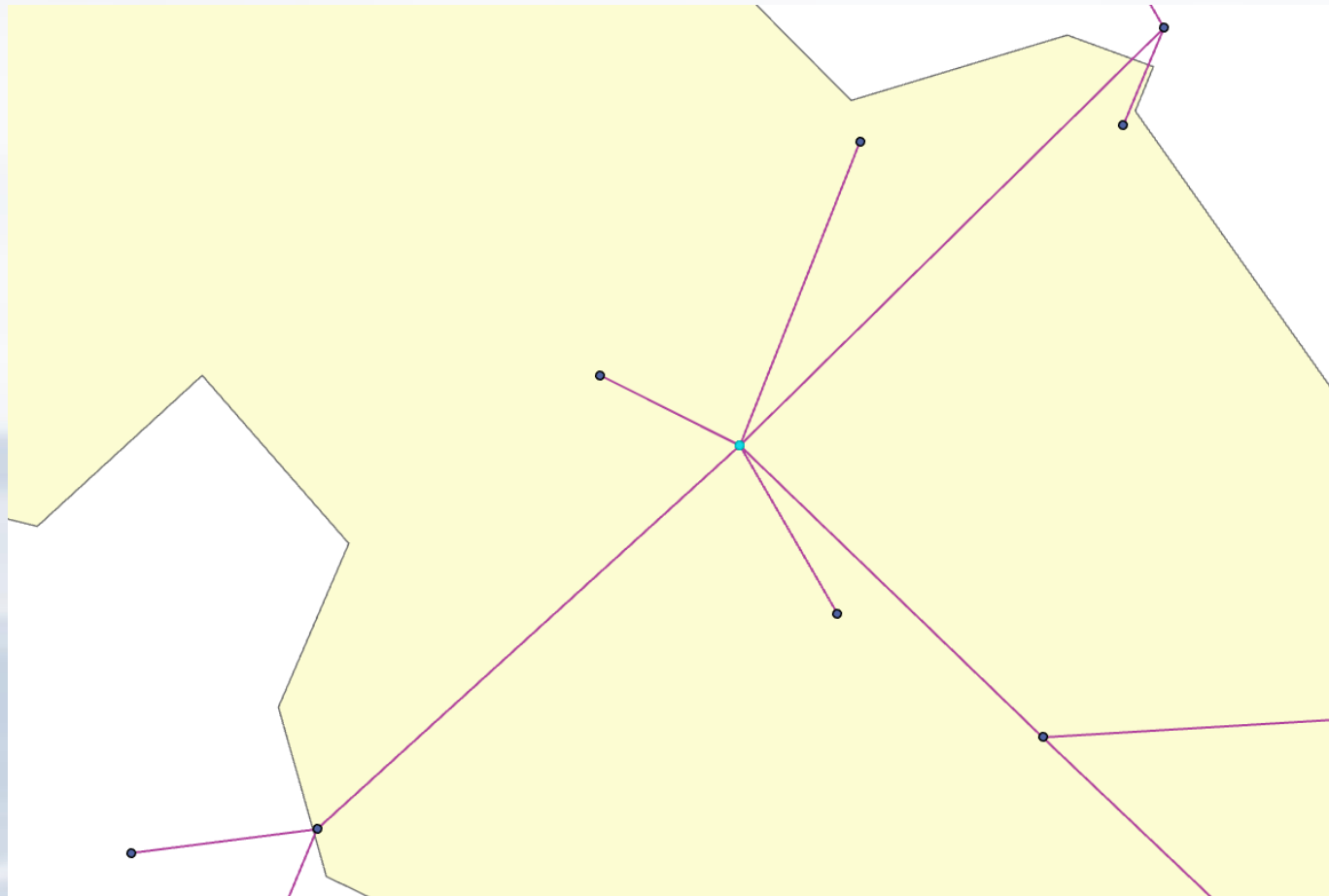
Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy

FID	Shape	CISLO	TYP_PASP	TRV_DRUH_L	CIS_KOM	KRAJ	KOD_KRAJE	SKUT_STA	PROVOZ_STA	STRANA	SPRAVCE	MATERIAL	DELKA	SIRKA	JTSK_X_Z	JTSK_Y_Z	Z_Z	JTSK_X_K	JTSK_Y_K	Z_K	ETRS89_S_Z	ETRS89_D_Z	ETRS89_S_K	ETRS89_D_K	STAV	ODTOK	DATUM	POZNAMKA_1	POZNAMKA_2	
1	0	Polyline	D08T45785SV	voda	trasa	D8	Ustecky	CZ 042	45.785	0	stred	SSUD 11 - Nova Ves	neurceno	1.28091	0	994612.73	761255.95	0	994612.34	761257.17	0	50.49543	14.07071	50.49543	14.07069	dobry	pritok potoka Modla, L...	28/04/2021	kanalizace - pripojka	
2	1	Polyline	D08T45741SV	voda	trasa	D8	Ustecky	CZ 042	45.741	0	stred	SSUD 11 - Nova Ves	neurceno	1.06016	0	994652.44	761235.33	0	994652.75	761236.34	0	50.4951	14.07107	50.49509	14.07106	dobry	pritok potoka Modla, L...	28/04/2021	kanalizace - pripojka	
3	2	Polyline	D08T45700SV	voda	trasa	D8	Ustecky	CZ 042	45.7	0	stred	SSUD 11 - Nova Ves	neurceno	0.84793	0	994689.26	761217.04	0	994689.62	761217.81	0	50.49479	14.0714	50.49479	14.07139	dobry	pritok potoka Modla, L...	28/04/2021	kanalizace - pripojka	
4	3	Polyline	D08T45185SV	voda	trasa	D8	Ustecky	CZ 042	45.518	0	stred	SSUD 11 - Nova Ves	neurceno	1.18109	0	994855.06	761143.94	0	994856.09	761144.52	0	50.49341	14.07275	50.4934	14.07275	dobry	pritok potoka Modla, L...	28/04/2021	kanalizace - pripojka	
5	4	Polyline	D08T45499SV	voda	trasa	D8	Ustecky	CZ 042	45.499	0	stred	SSUD 11 - Nova Ves	neurceno	0.94677	0	994873.63	761136.48	0	994873.95	761137.38	0	50.49325	14.07289	50.49325	14.07288	dobry	pritok potoka Modla, L...	28/04/2021	kanalizace - pripojka	
6	5	Polyline	D08T45479SV	voda	trasa	D8	Ustecky	CZ 042	45.479	0	stred	SSUD 11 - Nova Ves	neurceno	1.2003	0	994892.37	761129.4	0	994891.99	761130.54	0	50.4931	14.07303	50.4931	14.07301	dobry	pritok potoka Modla, L...	28/04/2021	kanalizace - pripojka	
7	6	Polyline	D08T45448SV	voda	trasa	D8	Ustecky	CZ 042	45.448	0	stred	SSUD 11 - Nova Ves	neurceno	0.90593	0	994920.75	761118.69	0	994920.99	761119.57	0	50.49286	14.07323	50.49285	14.07322	dobry	pritok potoka Modla, L...	28/04/2021	kanalizace - pripojka	

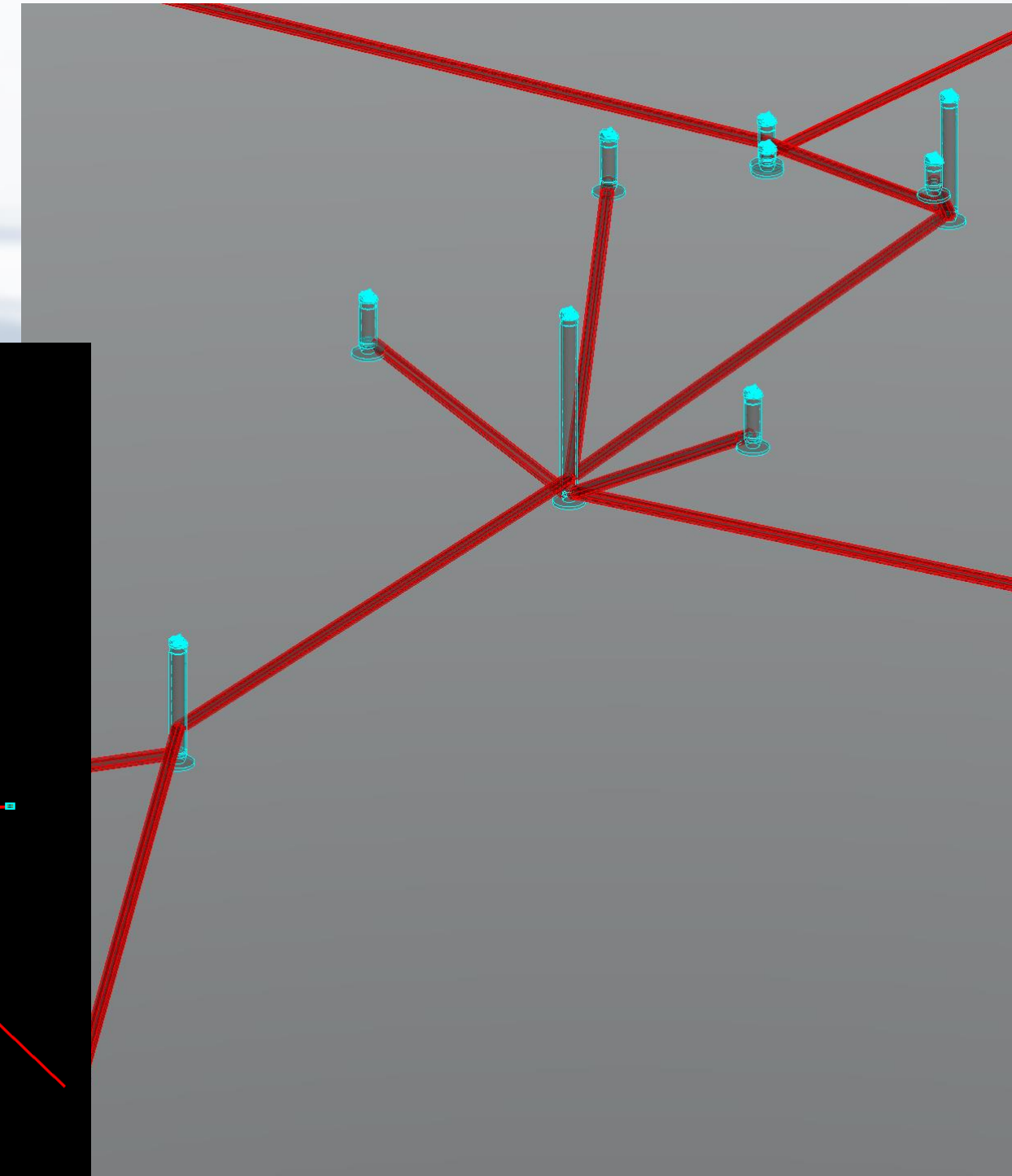
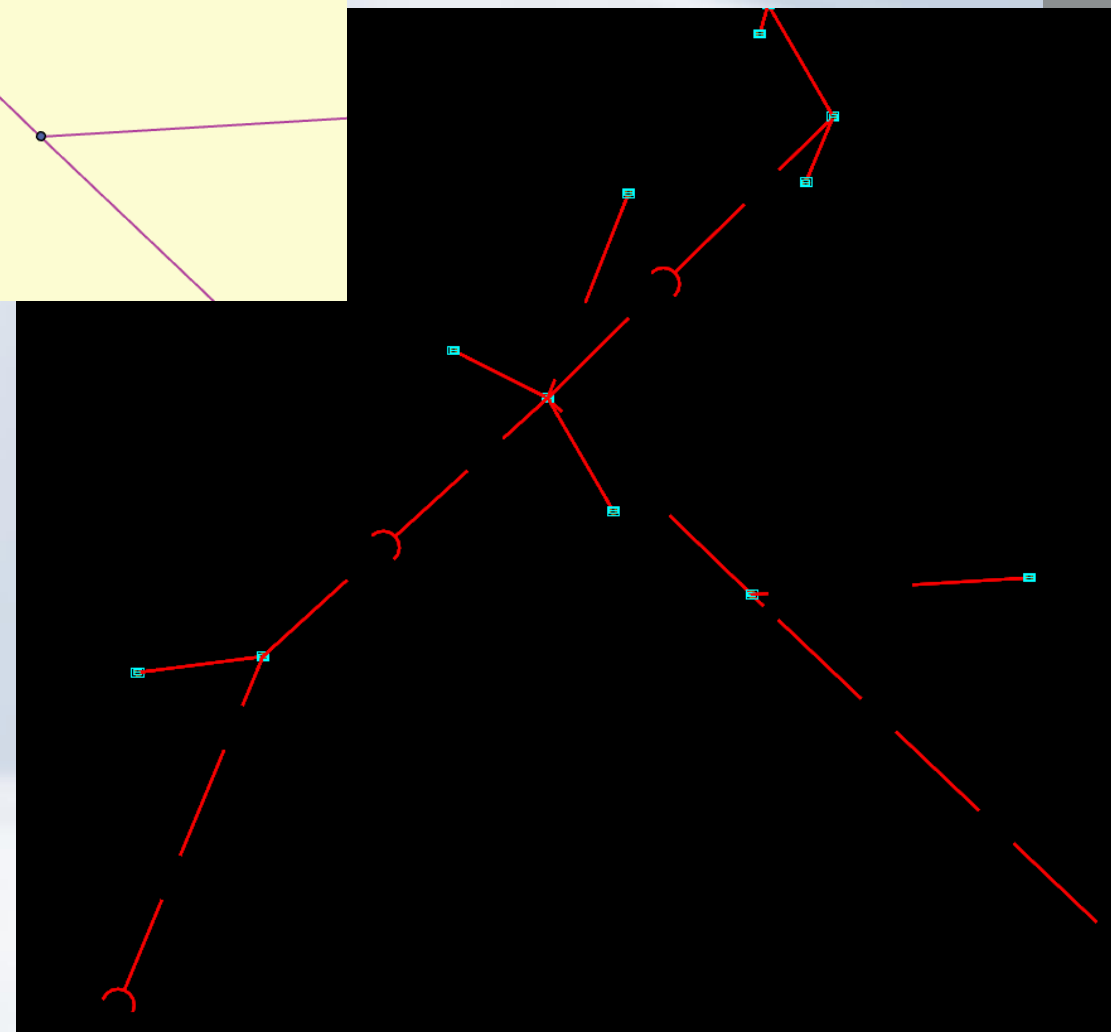
- Střet lidského faktoru ovlivňující jakost sbíraných informací
- Odstranění chyb a umožnění strojového zpracování

Counts by MATERIAL





- Průběh vytváření propojení mezi světy
- Topologie sítě zachována
- Rozvoj do prostředí informačního modelování jako základ i pro tvorbu „klasické dokumentace“



ModelBuilder Wizard [D8\_kanalda\_lokal -- Hlavni.stsw]

## ModelBuilder

Specify your Data Source

Select a Data Source type:

Esri Shapefiles

Select your Data Source:

D:\\_PGP\_USER\Zakazky\_BIM\RS\DTM\_Geobaze\TRV\SHP

Choose the tables you would like to work with:

X

WHERE: TVR\_DRUH\_B = 'sterbinova vpust'

Show Preview

- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'sterbinova vpust']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'sachta']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'ulicni vpust']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'retencni nadrz']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'vyustni objekt']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'revizni sachta']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'horska vpust']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'drenazni sachta']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'neurceno']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'propustek']
- TRV\_B\_2020 (Point) [TVR\_DRUH\_B = 'odlucovac ropnych latek']
- TRV\_L\_2020 (Polyline) [MATERIAL = 'keramika']
- TRV\_L\_2020 (Polyline) [MATERIAL = 'plast']
- TRV\_L\_2020 (Polyline) [MATERIAL = 'pozink']
- TRV\_L\_2020 (Polyline) [MATERIAL = 'betonL']
- TRV\_L\_2020 (Polyline) [MATERIAL = 'neurceno']
- TRV\_L\_2020 (Polyline) [MATERIAL = 'beton']
- TRV\_L\_2020 (Polyline) [MATERIAL = 'kamenina']

CISLO	TYP_PASP	PRVEK	TVR_DRUH_B	CIS_KOM	KRAJ	KOD_KU	K_U	KOD_KRAJ	PARCELA	VOD_URAD	SKUT_STA	PROVOZ_STA	SPRAVCE	STRANA	MAT_UZLU	NAPOJENI
D08U43980MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	43.98	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U43984MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	43.984	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U44015MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.015	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U44026MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.026	0	SSUD 11 - Nova Ves	prava	beton	
D08U44048MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.048	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U44063MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.063	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U44057MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.057	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U44026MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.026	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U43991MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	43.991	0	SSUD 11 - Nova Ves	prava	beton	
D08U43811MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	664693	Keblice	CZ 042		Lovosice	43.811	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U43840MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	664693	Keblice	CZ 042		Lovosice	43.84	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U43922MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	43.922	0	SSUD 11 - Nova Ves	prava	beton	
D08U44003MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.003	0	SSUD 11 - Nova Ves	prava	beton	
D08U44041MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.041	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U44064MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.064	0	SSUD 11 - Nova Ves	prava	beton	
D08U44073MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.073	0	SSUD 11 - Nova Ves	prava	neurceno	
D08U44040MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.04	0	SSUD 11 - Nova Ves	prava	beton	
D08U44001MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	44.001	0	SSUD 11 - Nova Ves	prava	beton	
D08U43894MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	43.894	0	SSUD 11 - Nova Ves	leva	neurceno	
D08U43918MR	voda	TRV_B	sterbinova vpust	D8	Ustecky	747831	Sirejovic	CZ 042		Lovosice	43.918	0	SSUD 11 - Nova Ves	leva	neurceno	
D08U29023PV	voda	TRV_B	sterbinova vpust	D8	Ustecky	666084	Klenec	CZ 042		Roudnice nad Labem	29.023	0	SSUD 11 - Nova Ves	prava	beton	
D08U29044PV	voda	TRV_B	sterbinova vpust	D8	Ustecky	666084	Klenec	CZ 042		Roudnice nad Labem	29.044	0	SSUD 11 - Nova Ves	prava	beton	

Cancel

Help

- Odstraněním chyb vzniklých lidským faktorem můžeme postoupit k nastavení propojení mezi datovými zdroji (GIS/BIM)

- Pro usnadnění strojového zpracování je potřeba jednoznačný identifikátor jednotlivých objektů, optimálně by byl vhodný jednotný klasifikační systém, např. CCI v aplikaci RDS

ModelBuilder Wizard [D8\_kanalda\_lokal -- Hlavni.stsw]

## ModelBuilder

Specify Spatial and Connectivity Options

Specify the Coordinate Unit of your data source:

m

How would you like to handle missing connectivity data?

Create nodes if none found at pipe endpoint

How would you like to establish pipe connectivity when not explicitly specified?

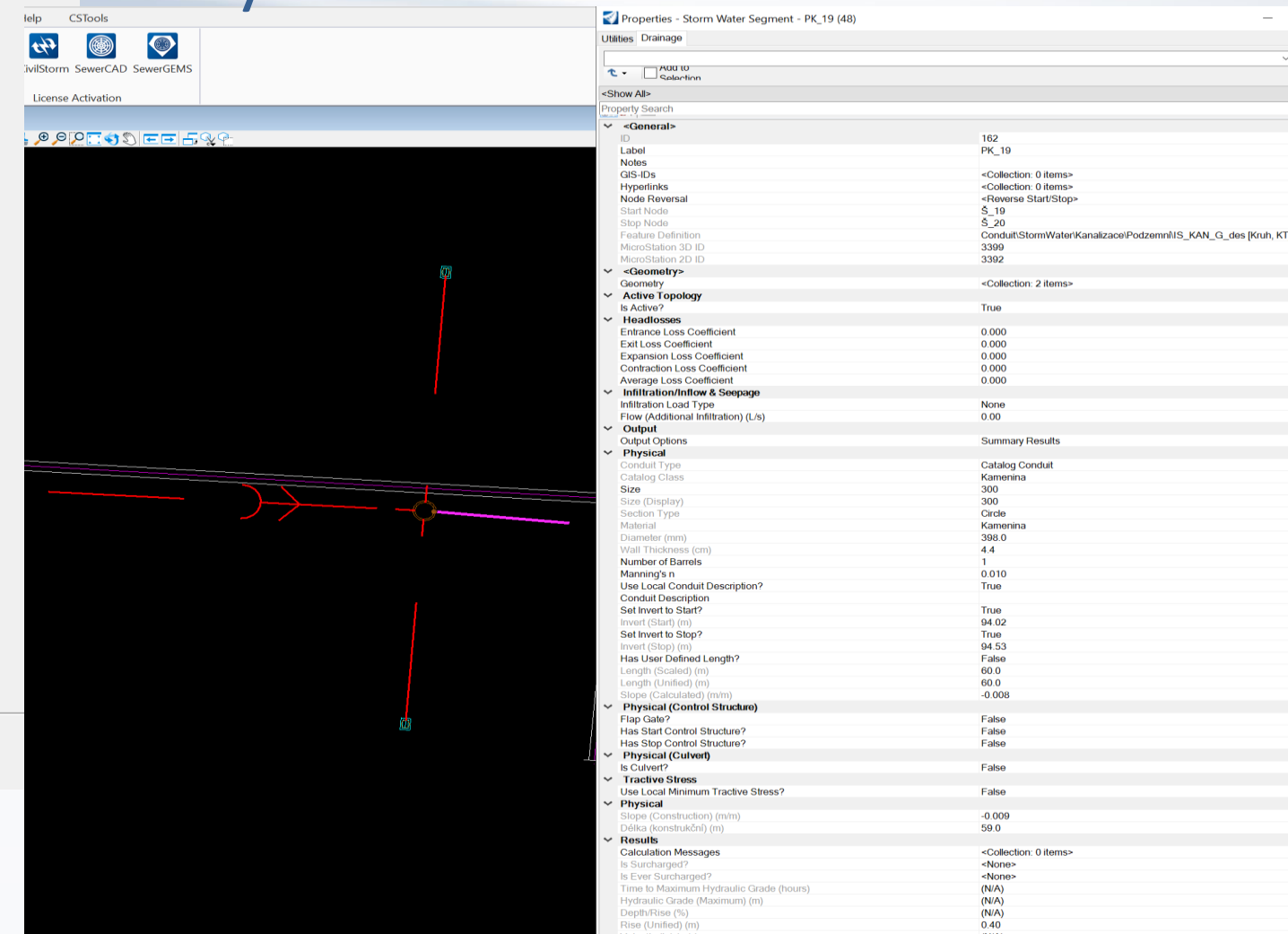
Establish connectivity using spatial data

Tolerance: 1 m

Cancel

Help

- Topologie sítě je nejdůležitějším prvkem grafické části komunikace
- Je zapotřebí definovat chování propojení v případě topologických chyb



The screenshot displays the ModelBuilder software interface. The main window shows a 3D view of a storm water segment, with a red arrow pointing to a specific point on the pipe. The right-hand pane shows the properties of the selected segment, titled "Properties - Storm Water Segment - PK\_19 (48)".

Property	Value
<b>&lt;General&gt;</b>	
ID	162
Label	PK_19
Notes	
GIS-IDs	<Collection: 0 items>
Hyperlinks	<Collection: 0 items>
Node Reversal	<Reverse Start/Stop>
Start Node	S_19
Stop Node	S_20
Feature Definition	Conduit(StormWater/Kanalizace)/Podzemni/S_KAN_G_des [Kruh, KT]
MicroStation 3D ID	3399
MicroStation 2D ID	3392
<b>&lt;Geometry&gt;</b>	
Geometry	<Collection: 2 items>
<b>Active Topology</b>	
Is Active?	True
<b>Headlosses</b>	
Entrance Loss Coefficient	0.000
Exit Loss Coefficient	0.000
Expansion Loss Coefficient	0.000
Contraction Loss Coefficient	0.000
Average Loss Coefficient	0.000
<b>Infiltration/Inflow &amp; Seepage</b>	
Infiltration Load Type	None
Flow (Additional Infiltration) (L/s)	0.00
<b>Output</b>	
Output Options	Summary Results
<b>Physical</b>	
Conduit Type	Catalog Conduit
Catalog Class	Kamerina
Size	300
Size (Display)	300
Section Type	Circle
Material	Kamerina
Diameter (mm)	300.0
Wall Thickness (cm)	4.4
Number of Barrels	1
Manning's n	0.010
Use Local Conduit Description?	True
Conduit Description	
Set Invert to Start?	True
Invert (Start) (m)	94.02
Set Invert to Stop?	True
Invert (Stop) (m)	94.53
Has User Defined Length?	False
Length (Scaled) (m)	60.0
Length (Unified) (m)	60.0
Slope (Calculated) (mm)	-0.008
<b>Physical (Control Structure)</b>	
Flap Gate?	False
Has Start Control Structure?	False
Has Stop Control Structure?	False
<b>Physical (Culvert)</b>	
Is Culvert?	False
<b>Tractive Stress</b>	
Use Local Minimum Tractive Stress?	False
<b>Physical</b>	
Slope (Construction) (m/m)	-0.009
Depth (Construction) (m)	59.0
<b>Results</b>	
Calculation Messages	<Collection: 0 items>
Is Surcharged?	<None>
Is Ever Surcharged?	<None>
Time to Maximum Hydraulic Grade (hours)	(N/A)
Hydraulic Grade (Maximum) (m)	(N/A)
Depth/Rise (%)	(N/A)
Rise (Unified) (m)	0.40
Velocity (In) (m/s)	(N/A)

ModelBuilder Wizard [D8\_kanalda\_lokal -- Hlavni.stsw]

## ModelBuilder

Specify element create/remove/update options

How would you like to handle synchronization between source and destination?

- Add objects to destination if present in source
  - Prompt before adding objects
- Remove objects from destination if missing from source
  - Prompt before removing objects
- Update existing objects in destination if present in source
  - Prompt before updating objects

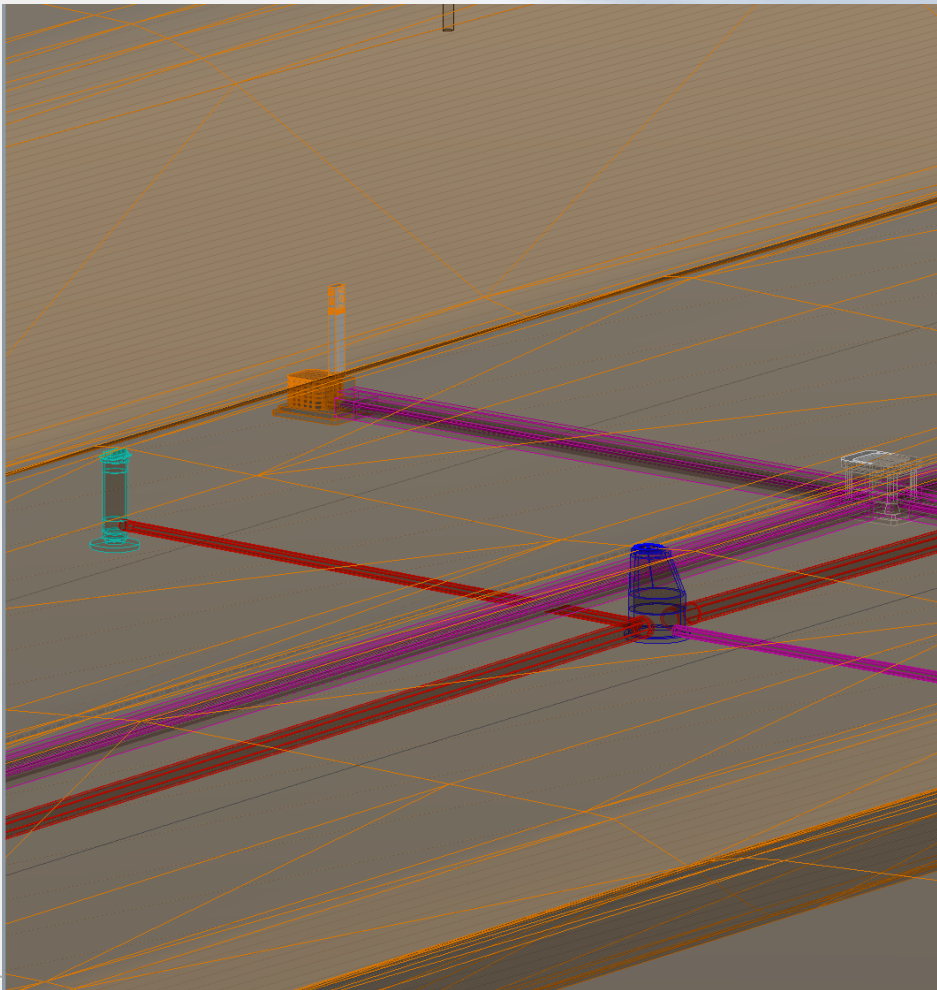
If an imported object refers to another object that does not yet exist in the model, should ModelBuilder:

- Create referenced object automatically?
  - Prompt before creating referenced objects

Cancel

Help

- Dále potřeba určit jak se má systém chovat v případě změn
- Specifikace pořadí zápisů změn mezi zdrojovým/cílovým úložištěm informací



<-Geometry>	<Collection: 2 items>
Geometry	
<Active Topology>	
Is Active?	True
<Headlosses>	
Entrance Loss Coefficient	0.000
Exit Loss Coefficient	0.000
Expansion Loss Coefficient	0.000
Contraction Loss Coefficient	0.000
Average Loss Coefficient	0.000
<Infiltration/Inflow & Seepage>	
Infiltration Load Type	None
Flow (Additional Infiltration) (L/s)	0.00
<Output>	
Output Options	Summary Results
<Physical>	
Conduit Type	Catalog Conduit
Catalog Class	Kamenina
Size	200
Size (Display)	200
Section Type	Circle
Material	Kamenina
Diameter (mm)	200.0
Wall Thickness (cm)	2.1
Number of Barrels	1
Manning's n	0.010
Use Local Conduit Description?	True
Conduit Description	
Set Invert to Start?	True
Invert (Start) (m)	93.78
Set Invert to Stop?	True
Invert (Stop) (m)	94.02
Has User Defined Length?	False
Length (Scaled) (m)	12.7
Length (Unified) (m)	12.7
Slope (Calculated) (m/m)	-0.019
<Physical (Control Structure)>	
Flap Gate?	False
Has Start Control Structure?	False
Has Stop Control Structure?	False
<Physical (Culvert)>	
Is Culvert?	False
<Tractive Stress>	
Use Local Minimum Tractive Stress?	False
<Physical>	
Slope (Construction) (m/m)	-0.020
Délka (konstrukční) (m)	12.0
<Results>	
Calculation Messages	<Collection: 0 items>
Is Surcharged?	<None>
Is Ever Surcharged?	<None>

- Spolu s nastavení chování změn je potřeba dbát o způsoby výpočtů nad zdrojovými daty z GIS
- V průběhu práce s „živými daty“ dochází k jejich změnám
- Je potřeba udržovat vazbu mezi změnami na objektech a nově tvořenými objekty a to za pomoci unikátních identifikátorů či v případě chybějícího identifikátoru pomocí polohy objektu

ModelBuilder Wizard [D8\_kanalda\_lokal -- Hlavni.stsw]

## ModelBuilder

Specify additional options

How would you like to import incoming data?

Current Scenario

How would you like to map elements in the data source to elements in the destination?

Map elements by key field

Label

If several elements share the same GIS-ID, then apply updates to all of them?

Prompt before cascading updates

How would you like to handle adds/removes of elements with GIS-ID mappings on subsequent imports?

Recreate elements associated with a GIS-ID that was previously deleted from the model.

When removing objects from destination if missing from source, only remove objects that have a GIS-ID.

Map elements spatially to closest matching geometries (spatial join)

Tolerance:  m

Cancel

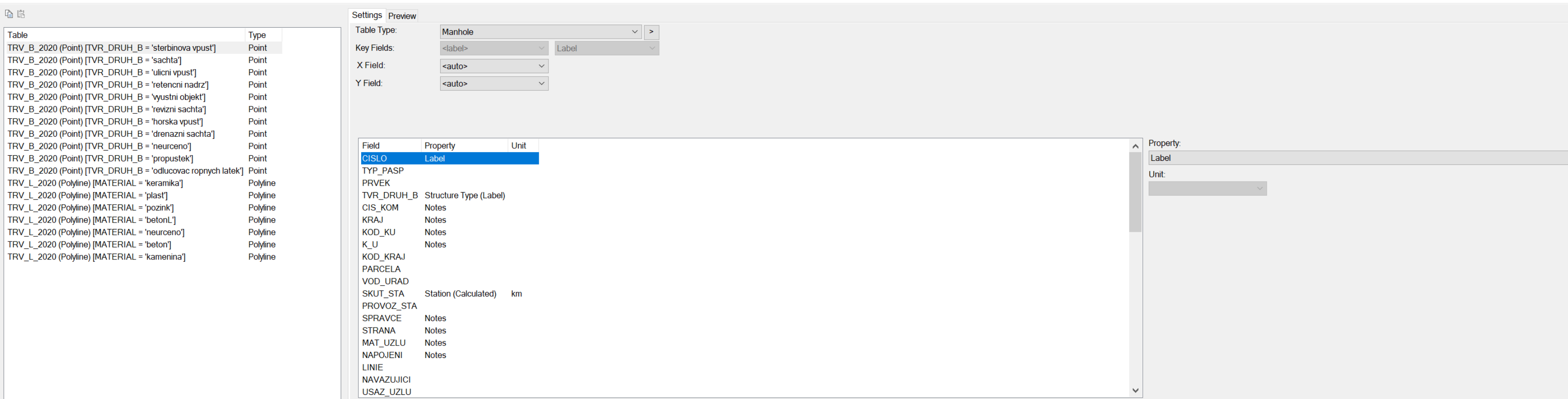
Help



ModelBuilder Wizard [D8\_kanalda\_lokal -- Hlavni.stsw]

## ModelBuilder

Specify Field Mappings for each table



The screenshot shows the 'ModelBuilder Wizard' interface for specifying field mappings for a 'Manhole' table. The interface is divided into several sections:

- Table List:** A list of tables and their types. The 'Point' type is selected, and the 'Manhole' table is highlighted.
- Settings:** A section for configuring the table type and key fields. The 'Table Type' is set to 'Manhole'. The 'Key Fields' are set to '<label>' and 'Label'. The 'X Field' and 'Y Field' are set to '<auto>'.
- Field Mappings:** A table showing the mapping of fields from the source table to the target table. The 'CISLO' field is mapped to the 'Label' property.
- Property:** A section for configuring the properties of the field. The 'Label' property is selected, and the 'Unit' is set to 'km'.

Table	Type
TRV_B_2020 (Point) [TVR_DRUH_B = 'sterbinova vpust']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'sachta']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'ulicni vpust']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'retencni nadrz']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'vyustni objekt']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'revizni sachta']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'horska vpust']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'drenazni sachta']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'neurceno']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'propustek']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'odlucovac ropnych latek']	Point
TRV_L_2020 (Polyline) [MATERIAL = 'keramika']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'plast']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'pozink']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'betonL']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'neurceno']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'beton']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'kamenina']	Polyline

Field	Property	Unit
CISLO	Label	
TYP_PASP		
PRVEK		
TVR_DRUH_B	Structure Type (Label)	
CIS_KOM	Notes	
KRAJ	Notes	
KOD_KU	Notes	
K_U	Notes	
KOD_KRAJ		
PARCELA		
VOD_URAD		
SKUT_STA	Station (Calculated)	km
PROVOZ_STA		
SPRAVCE	Notes	
STRANA	Notes	
MAT_UZLU	Notes	
NAPOJENI	Notes	
LINIE		
NAVAZUJICI		
USAZ_UZLU		

Cancel Help

- Jedním z nejdůležitějších kroků pro navázání propojení je „namapování“ atributů mezi systémy
- Atributové informace objektů z pohledu GIS odpovídají projektovým parametrům grafických reprezentantů v systémech BIM

ModelBuilder Wizard [D8\_kanalda\_lokal -- Hlavni.stsw]

**ModelBuilder**  
Specify Field Mappings for each table

Table	Type
TRV_B_2020 (Point) [TVR_DRUH_B = 'sterbinova vpust']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'sachta']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'ulicni vpust']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'retencni nadrz']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'vyustni objekt']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'revizni sachta']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'horska vpust']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'drenazni sachta']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'neurceno']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'propustek']	Point
TRV_B_2020 (Point) [TVR_DRUH_B = 'odlucovac ropnych latek']	Point
TRV_L_2020 (Polyline) [MATERIAL = 'keramika']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'plast']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'pozink']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'betonL']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'neurceno']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'beton']	Polyline
TRV_L_2020 (Polyline) [MATERIAL = 'kamenina']	Polyline

**Settings**

Table Type: Conduit >

Feature Definition:  
Conduit\StormWater\Kanalizace\Podzemni\IS\_KAN\_G\_des [Kruh, PP], (DN)

Missing Node Feature Definition:  
Node\CommunicationsNode\Sdělovací vedení\RSD\_SOS\_hlaska\_kab\_sachta

Cancel Help

- Nyní je možno provést definování vazby mezi objekty GIS a grafickou interpretací jednotlivých objektů
- Krok potřebný pro vytvoření grafické interpretace objektů sítě pro potřeby návrhových prací

ModelBuilder Wizard [D8\_kanalda\_lokal -- Hlavni.stsw]

**ModelBuilder**  
Specify snapshot settings. Snapshots capture the state of your data source (at synchronization time), allowing ModelBuilder to determine what has changed (since the last synchronization from the data source).

Use snapshots to track changes to your datasource between synchronizations

Import only what has changed since the last tracked synchronization

Use latest snapshot

Use selected snapshot

Specify a custom location to store snapshots

Automatically create a subdirectory for snapshots belonging to this connection

Subdirectory

Location

- Automatické sledování změn mezi jednotlivými verzemi informačních souborů a jejich grafické znázornění

Properties - Manhole - D08S900929SV (2126)

Utilities Drainage

<Show All>

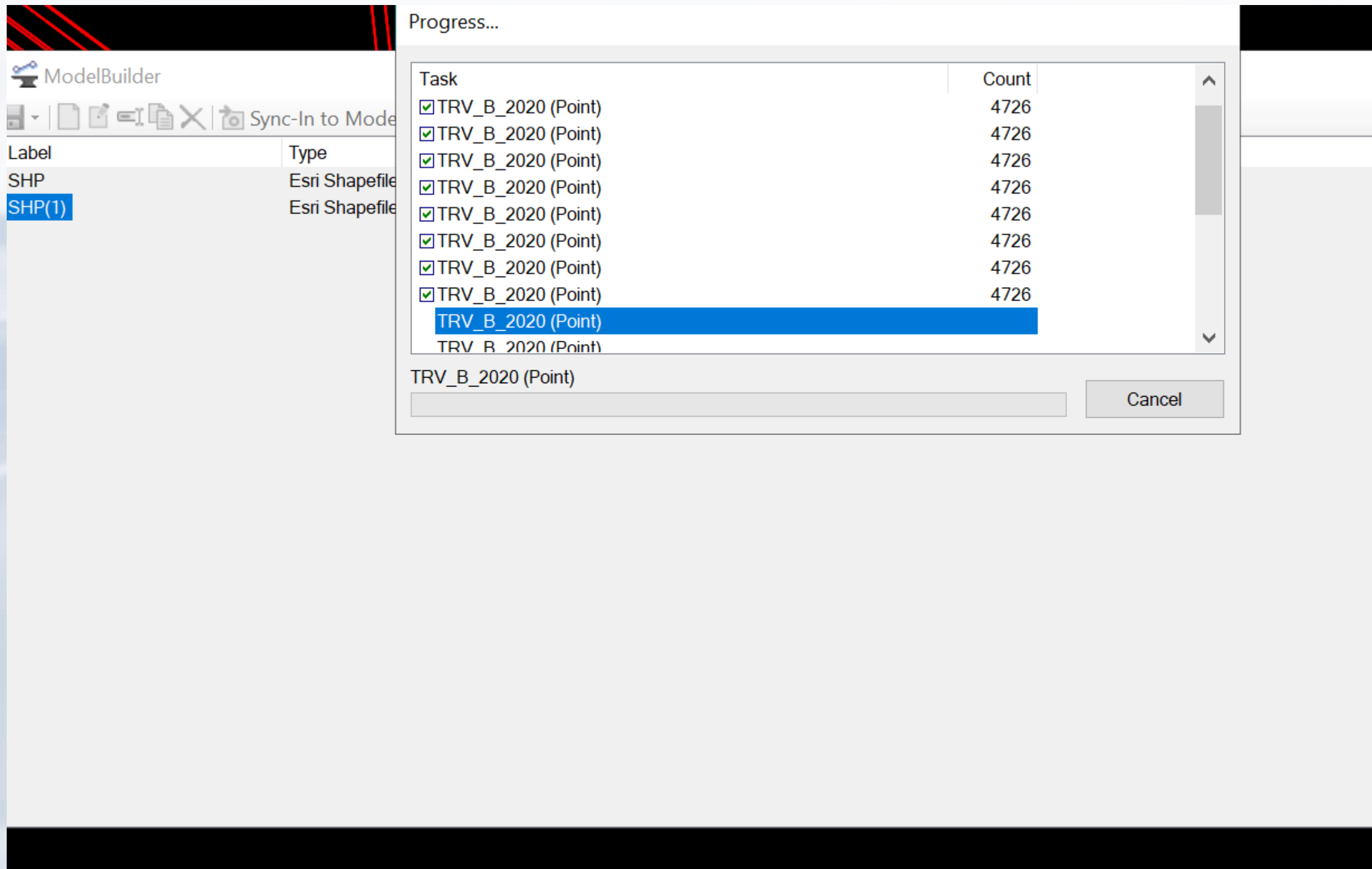
Property Search

<b>&lt;General&gt;</b>	
ID	2235
Label	D08S17183SV
Notes	Stredocesky
GIS-IDs	<Collection: 0 items>
Hyperlinks	<Collection: 0 items>
Feature Definition	Node\StormWaterNode\Kanalizace\Podzemni\RSD_VL2_24_02_2022 [450, Kruh, be
MicroStation 3D ID	10968
MicroStation 2D ID	10964
<b>&lt;Geometry&gt;</b>	
X (m)	-746,512.10
Y (m)	-1,017,851.72
Set Out X (m)	0.00
Set Out Y (m)	0.00
Set Out Elevation (m)	0.00
Node Rotation (degrees)	0.00
<b>Active Topology</b>	
Is Active?	True
<b>Design</b>	
Freeboard (Required) (m)	0.30
<b>Inflow (Sanitary Loading)</b>	
Sanitary Loads	<Collection: 0 items>
<b>Inflow (Wet)</b>	
Inflow (Wet) Collection	<Collection: 0 items>
<b>Physical (Structure Losses)</b>	
Headloss Method	Absolute
Absolute Headloss (m)	0.00
<b>Physical (Surface Storage)</b>	
Surface Storage Type	No Storage
<b>Connecting Links</b>	
Largest Connected Conduit (mm)	300.0
Smallest Connected Conduit (mm)	300.0
Conduit 1 Label	D08T17183SV
Conduit 1 Section Type	Circle
Conduit 1 Material	Beton
Conduit 1 Size (mm)	300.0
Conduit 1 Invert (m)	173.61
Conduit 1 Angle (degrees)	153.32
Conduit 1 Drainage ID	4696
Conduit 2 Label	D08T17176SV
Conduit 2 Section Type	Circle
Conduit 2 Material	Beton
Conduit 2 Size (mm)	300.0
Conduit 2 Invert (m)	173.61
Conduit 2 Angle (degrees)	300.13
Conduit 2 Drainage ID	4709
Conduit 3 Label	D08T17183PV
Conduit 3 Section Type	Circle
Conduit 3 Material	Beton
Conduit 3 Size (mm)	300.0
Conduit 3 Invert (m)	173.61
Conduit 3 Angle (degrees)	68.43
Conduit 3 Drainage ID	4906
Conduit 4 Label	D08T17016SV
Conduit 4 Section Type	Circle
Conduit 4 Material	Beton
Conduit 4 Size (mm)	300.0
Conduit 4 Invert (m)	173.61
Conduit 4 Angle (degrees)	316.07
Conduit 4 Drainage ID	5206
Conduit 5 Label	(N/A)
Conduit 5 Section Type	(N/A)
Conduit 5 Material	(N/A)
Conduit 5 Size (mm)	0.0
Conduit 5 Invert (m)	0.00
Conduit 5 Angle (degrees)	0.00

- Interpretace atributů objektů do podoby vlastností grafických objektů dle potřeby výpočetních prostředí BIM

Conduit 5 Drainage ID	0
Outgoing Label	(N/A)
Outgoing Section Type	(N/A)
Outgoing Material	(N/A)
Outgoing Size (mm)	0.0
Outgoing Invert (m)	0.00
Outgoing Angle (degrees)	0.00
Outgoing Drainage ID	0
Diversion Label	(N/A)
Diversion Section Type	(N/A)
Diversion Material	(N/A)
Diversion Size (mm)	0.0
Diversion Invert (m)	0.00
Diversion Angle (degrees)	0.00
Diversion Drainage ID	0
<b>Physical</b>	
Elevation (Ground) (m)	180.10
Set Rim to Ground Elevation?	True
Elevation (Rim) (m)	180.10
Elevation (Invert) (m)	173.61
Structure Type	Circular Structure
Diameter (mm)	1,000.0
Bolted Cover?	False
<b>Reference</b>	
Základní prvek	
Základní staničení (m)	0+00
Základní odstup (m)	0.0
Výška Reference	
<b>Results</b>	
Calculation Messages	<Collection: 0 items>
Is Overflowing?	<None>
Is Surcharged?	<None>
Is Ever Surcharged?	<None>
Is Ever Overflowing?	<None>
Time to Maximum Hydraulic Grade (hours)	(N/A)
Hydraulic Grade (Maximum) (m)	(N/A)
Time to Maximum Overflow (hours)	(N/A)
Flow (Overflow Maximum) (L/s)	(N/A)
Time to Maximum Outflow (hours)	(N/A)
Velocity (In) (m/s)	(N/A)
Time to Maximum Inflow (hours)	(N/A)
Flow (Out to Links Maximum) (L/s)	(N/A)
Velocity (Out) (m/s)	(N/A)
Flow (Total In Maximum) (L/s)	(N/A)
Flow (Overflow) (L/s)	(N/A)
<b>Results (Engine Parsing)</b>	
Branch	(N/A)
<b>Results (Extended Node)</b>	
Volume (L)	(N/A)
Depth (Flooding) (m)	(N/A)
Freeboard Height (m)	(N/A)
<b>Results (Flow)</b>	
Flow (Total In) (L/s)	(N/A)
Flow (Local Surface) (L/s)	(N/A)
Flow (Total Out) (L/s)	(N/A)
Local Inflow?	<None>
Flow (Local from Inflow Collection) (L/s)	(N/A)
Volume (Total Outflow) (L)	(N/A)
Flow (Local In) (L/s)	(N/A)
<b>Results (Misc)</b>	
Depth (Structure) (m)	6.49
<b>Results (Profile)</b>	
Depth (In) (m)	(N/A)
Depth (Out) (m)	(N/A)
Energy Grade Line (In) (m)	(N/A)
Energy Grade Line (Out) (m)	(N/A)
Hydraulic Grade Line (In) (m)	(N/A)
Hydraulic Grade Line (Out) (m)	(N/A)
Headloss (m)	(N/A)
<b>Results (System Flow)</b>	
Areal Reduction Factor	(N/A)

**ID**  
Unique identifier assigned to this element.



The screenshot shows the ModelBuilder software interface. On the left, there is a 'ModelBuilder' window with a toolbar and a table. The table has two columns: 'Label' and 'Type'. The 'Label' column contains 'SHP' and 'SHP(1)'. The 'Type' column contains 'Esri Shapefile' and 'Esri Shapefile'. In the center, a 'Progress...' dialog box is open, displaying a table with two columns: 'Task' and 'Count'. The 'Task' column lists 'TRV\_B\_2020 (Point)' with a checked checkbox for each of the first eight rows. The 'Count' column shows the value '4726' for each row. The ninth row is highlighted in blue and shows 'TRV\_B\_2020 (Point)' with an unchecked checkbox. Below the table, there is a text field containing 'TRV\_B\_2020 (Point)' and a 'Cancel' button.

Task	Count
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input checked="" type="checkbox"/> TRV_B_2020 (Point)	4726
<input type="checkbox"/> TRV_B_2020 (Point)	
TRV_B_2020 (Point)	

- Výsledkem správně ustanoveného propojení je živé spojení mezi světem GIS a BIM

Děkujeme Vám za pozornost.