



# BIM u praksi – studija slučaja projekta „Stanovanjska soseska Novo Brdo – funkcionalni enoti E2 in E3, Ljubljana

**Martina Pavlović Cerinski**



## Osnovni podaci o projektu:

**Naziv projekta:** Stanovanjska soseska Novo Brdo – funkcionalni enoti E2 in E3

**Objekt:** Novo Brdo, E2 in E3

**Investitor:** Stanovanjski Sklad Republike Slovenije

**Veličina projekta:** 66.000 m<sup>2</sup>

**Karakteristike:** 18 višestambenih zgrada i 2 garaže

**Faza projekta:** Izvedbeni projekt

**LOD:** 350

**Razlog za BIM:** 4D, 5D, 6D



## **Sudionici na projektu:**

**INVESTITOR:** Stanovanjski Sklad Republike Slovenije

**VODITELJ PROJEKTA:** Dekleva Gregorić Arhitekti d.o.o.

**PROJEKTANT ARHITEKTURE:** Dekleva Gregorić Arhitekti d.o.o.

**PROJEKTANT KONSTRUKCIJA:** CBD d.o.o.

**PROJEKTANT STROJARSKIH INSTALACIJA:** VELING-DEOL d.o.o..

**PROJEKTANT ELEKTRO INSTALACIJA:** MAT.EL d.o.o.

**PROJEKANT PROMETNICA, VANJ. UREĐENJA I**

**VANJ.INFRASTRUKTURE:** STANDARD d.o.o.

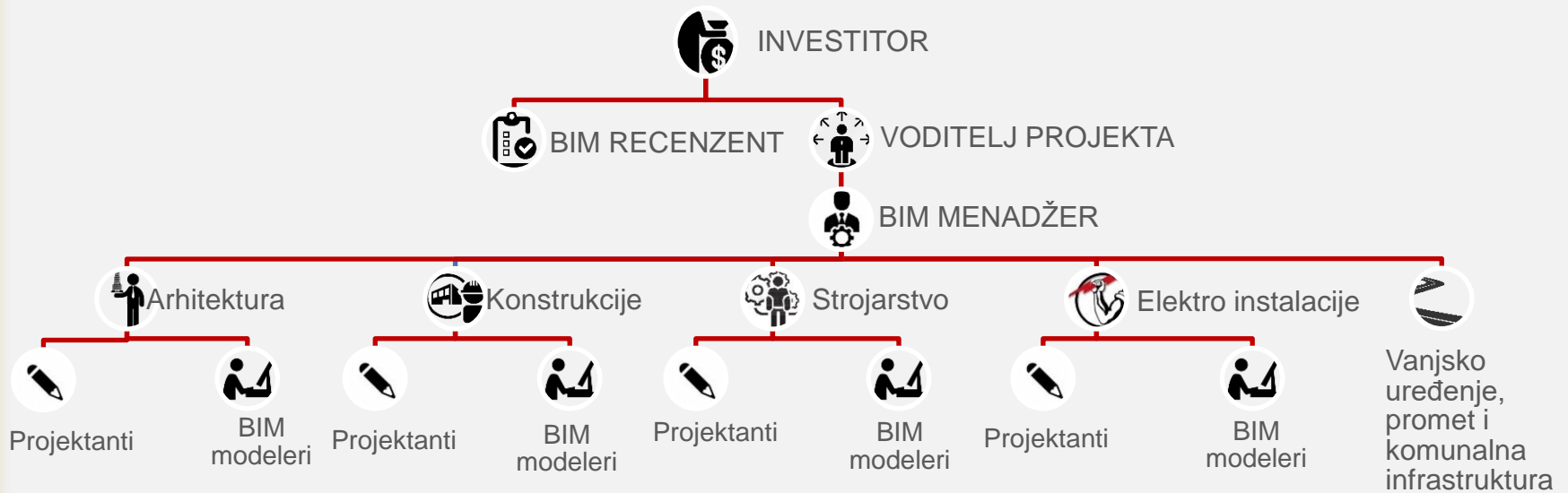
**BIM RECENZENT:** KošorokGartner arhitekti d.o.o.

**BIM KOORDINATOR I MODELER:** Intelika d.o.o.



# 1. ORGANIZACIJA PROJEKTA

## Organizacijska struktura projekta



# 1. ORGANIZACIJA PROJEKTA

## BIM Plan izvršenja - BEP



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# 1. ORGANIZACIJA PROJEKTA

## BIM Plan izvršenja - BEP

OBJEKT S5		
SBE-DGA-S5-3D-AR-0001	Arhitektura	DGA
SBE-CBD-S5-3D-GK-0001	Statika	CBD
SBE-MAT-S5-3D-EI-0001	Elektro instalacije	MAT
SBE-VEL-S5-3D-SI-0001	Strojne instalacija	VEL
OBJEKT S6		
SBE-DGA-S6-3D-AR-0001	Arhitektura	DGA
SBE-CBD-S6-3D-GK-0001	Statika	CBD
SBE-MAT-S6-3D-EI-0001	Elektro instalacije	MAT
SBE-VEL-S6-3D-SI-0001	Strojne instalacija	VEL
OBJEKT L3		
SBE-DGA-L3-3D-AR-0001	Arhitektura	DGA
SBE-CBD-L3-3D-GK-0001	Statika	CBD
SBE-MAT-L3-3D-EI-0001	Elektro instalacije	MAT
SBE-VEL-L3-3D-SI-0001	Strojne instalacija	VEL
OBJEKT Z2		
SBE-DGA-Z2-3D-AR-0001	Arhitektura	DGA
SBE-CBD-Z2-3D-GK-0001	Statika	CBD
SBE-MAT-Z2-3D-EI-0001	Elektro instalacije	MAT
SBE-VEL-Z2-3D-SI-0001	Strojne instalacija	VEL
OBJEKT Z3		
SBE-DGA-Z3-3D-AR-0001	Arhitektura	DGA
SBE-CBD-Z3-3D-GK-0001	Statika	CBD
SBE-MAT-Z3-3D-EI-0001	Elektro instalacije	MAT
SBE-VEL-Z3-3D-SI-0001	Strojne instalacija	VEL
OBJEKT Z4		
SBE-DGA-Z4-3D-AR-0001	Arhitektura	DGA
SBE-CBD-Z4-3D-GK-0001	Statika	CBD
SBE-MAT-Z4-3D-EI-0001	Elektro instalacije	MAT
SBE-VEL-Z4-3D-SI-0001	Strojne instalacija	VEL
SITUACIJA		
SBE-STA-NN-3D-ZU-0001	Zunanja ureditev celotnega območja	
SBE-STA-NN-3D-PU-0001	Prometna ureditev celotnega območja	
SBE-STA-NN-3D-KU-0001	Komunalna ureditev celotnega območja	
SBE-STA-NN-3D-ZM-0001	ZDUŽEN MODEL - SITUACIJA	



# 1. ORGANIZACIJA PROJEKTA

## BIM Plan izvršenja - BEP

### 7.4. Izmenjava informacij

#### a) Programska oprema

Udeleženci na projektu bodo za ustvarjanje informacij uporabljali naslednjo programsko opremo:

VLOGA NA PROJEKTU	PROGRAMSKA OPREMA	VERZIJA	IZVORNI FORMAT
NAROČNIK	Autodesk Navisworks	2018	.nwd
BIM NADZORNIK	Autodesk Revit Autodesk Navisworks	2018 2018	.rvt .nwd
VODILNI PROJEKTANT	Autodesk Revit Autodesk Navisworks	2018 2018	.rvt .nwd
PROJEKTANT STATIKE	Autodesk Revit	2018	.rvt
PROJEKTANT ELEKTRO INSTALACIJ	Autodesk Revit	2018	.rvt
PROJEKTANT STROJNIH INSTALACIJ	Autodesk Revit	2018	.rvt
ZUNANJA UREDITEV, KANALIZACIJA IN PROMET	Autodesk Revit	2018	.rvt

#### b) Sistemske zahteve

Za zagotovitev dostopa do informacij ter minimaliziranje tveganja poškodb oz. nedelovanje modelov morajo biti zagotovljene naslednje sistemske zahteve:

- Udeleženci projekta morajo poskrbeti, da posamična datoteka modela ne bo presegla 250Mb. V kolikor velikost modela presega 250Mb je potrebno model razdeliti na logične pod-enote, ki posamezno ne presegajo omenjene velikosti.
- Dokumenti naj ne vsebujejo elementov, ki presegajo določeno stopnjo razvitosti elementov določenih s seznamom stopenj razvitosti elementov.

#### c) Formati za izmenjevanje modelov ter predajnih dokumentov

V sklopu predajnih dokumentov projekta se poleg izvornih datotek modelov predajo tudi IFC 2x3 datoteke.

Natančen izvoz IFC 2x3 datoteke je definiran v [prilogi B](#).

#### d) Varovanje informacij

Vse informacije o projektu so zaupne, dokler se o tem drugače ne odloči naročnik. Od udeležencev na projektu se pričakuje, da informacije ustvarjanje tekom projektiranja ne bodo javno prikazovane ali kakorkoli drugače uporabljene brez dovoljenja naročnika.





# 1. ORGANIZACIJA PROJEKTA

## BIM Plan izvršenja - BEP

### COBIE Parametri

Contact (cont.)					
Country	United Kingdom	Requireable	Vsi udeleženci	PZI	N
Facility					
Name	Brdo E2 - objekt M1	Expected	Arhitekt	PZI	D
CreatedBy	name@email.com	Reference	Arhitekt	PZI	D
CreatedOn	2016-05-27T11:00:00	Expected	Arhitekt	PZI	D
Category	EN_25_10_40	Pick list, Uniclass 2015	Arhitekt	PZI	D
ProjectName	School new build	Expected	Arhitekt	PZI	D
SiteName	School park	Expected	Arhitekt	PZI	D
LinearUnits	millimeters	Reference	Arhitekt	PZI	N
AreaUnits	squaremeters	Reference	Arhitekt	PZI	N
VolumeUnits	cubicmeters	Reference	Arhitekt	PZI	N
CurrencyUnit	euros	Reference	Arhitekt	PZI	N
AreaMeasurement	RICS BCIS	Expected	Arhitekt	PZI	N
ExternalSystem	Authoring Application	Application	n/a	PZI	A
ExternalProjectObject	IfcProject	Application	n/a	PZI	A
ExternalProjectIdentifier	8964cf00-dba8-4634-8964-71323a35df63	Application	n/a	PZI	A
ExternalSiteObject	IfcSite	Application	n/a	PZI	A
ExternalSiteIdentifier	8964cf00-dba8-4634-8964-71323a35df63	Application	n/a	PZI	A
ExternalFacilityObject	IfcBuilding	Application	n/a	PZI	A
ExternalFacilityIdentifier	8964cf00-dba8-4634-8964-71323a35df63	Application	n/a	PZI	A
Description	Four story secondary school	Requireable	Arhitekt	PZI	N
ProjectDescription	New build secondary school	Requireable	Arhitekt	PZI	N
SiteDescription	Some school, street, town, county, post code	Requireable	Arhitekt	PZI	N
Phase	CIC 6: Handover	Pick List	Arhitekt	PZI	N



# 1. ORGANIZACIJA PROJEKTA

## BIM Plan izvršenja - BEP

### COBIE Parametri

Floor					
Name	Level 0	Expected	Arhitekt	PZI	D
CreatedBy	name@email.com	Reference	Arhitekt	PZI	D
CreatedOn	2016-05-27T11:00:00	Expected	Arhitekt	PZI	D
Category	Floor	Pick list	Arhitekt	PZI	D
ExtSystem	Authoring Application	Application	n/a	PZI	A
ExtObject	IfcBuildingStory	Application	n/a	PZI	A
ExtIdentifier	8964cf00-dba8-4634-8964-71323a35df63	Application	n/a	PZI	A
Description	Entrance Level	Requireable	Arhitekt	PZI	N
Elevation	0	Requireable	Arhitekt	PZI	N
Height	4000	Requireable	Arhitekt	PZI	N
Space					
Name	101	Expected	Arhitekt	PZI	D
CreatedBy	name@email.com	Reference	Arhitekt	PZI	D
CreatedOn	2016-05-27T11:00:00	Expected	Arhitekt	PZI	D
Category	SL_25_10_14	Pick list defined within BEP	Arhitekt	PZI	D
FloorName	Level 0	Reference	Arhitekt	PZI	D
Description	Classroom	Expected	Arhitekt	PZI	D
ExtSystem	Authoring Application	Application	n/a	PZI	A
ExtObject	IfcSpace	Application	n/a	PZI	A
ExtIdentifier	8964cf00-dba8-4634-8964-71323a35df63	Application	n/a	PZI	A
RoomTag	CL 101	Requireable	Arhitekt	PZI	D
UsableHeight	2955	Requireable	Arhitekt	PZI	D
GrossArea	24.837	Requireable	Arhitekt	PZI	D
NetArea	24.837	Requireable	Arhitekt	PZI	D



# 1. ORGANIZACIJA PROJEKTA

## BIM Plan izvršenja - BEP

### COBIE Parametri

Type					
Name	NBL_LightFixture_CeilingPendant	Expected, BS8541-1:2014	Projektna ekipa	PZI	D
CreatedBy	name@email.com	Reference	Projektna ekipa	PZI	D
CreatedOn	2016-05-27T11:00:00	Expected	Projektna ekipa	PZI	D
Category	Pr_70_70_48_62	Pick list, Uniclass 2015	Projektna ekipa	PZI	D
Description	Single pendant ceiling light fixture	Expected	Projektna ekipa	PZI	D
AssetType	Fixed	Pick List	Projektna ekipa	PZI	D
Manufacturer	company@email.com	Reference	Glavni Izvajalec	PID	D
ModelNumber	34400/29/38	Expected	Glavni Izvajalec	PID	D
WarrantyGuarantorParts	company@email.com	Reference	Glavni Izvajalec	PID	N
WarrantyDurationParts	2	Expected	Glavni Izvajalec	PID	N
WarrantyGuarantorLabor	company@email.com	Reference	Glavni Izvajalec	PID	N
WarrantyDurationLabor	2	Expected	Glavni Izvajalec	PID	N
Type (cont.)					
WarrantyDurationUnit	Year	Pick List	Glavni Izvajalec	PID	D
ExtSystem	Authoring Application	Application	n/a	PZI	A
ExtObject	IfcLightFixtureType	Application	n/a	PZI	A
ExtIdentifier	8964cf00-dba8-4634-8964-71323a35df63	Application	n/a	PZI	A
ReplacementCost	40	Requireable	Glavni Izvajalec	PID	D
ExpectedLife	10	Requireable	Glavni Izvajalec	PID	D
DurationUnit	Year	Pick list	Glavni Izvajalec	PID	D
WarrantyDescription	Onsite and replacement warranty	Requireable	Glavni Izvajalec	PID	N
NominalLength	290	Expected	Projektna ekipa	PZI	D
NominalWidth	290	Expected	Projektna ekipa	PZI	D
NominalHeight	220	Expected	Projektna ekipa	PZI	D



# 1. ORGANIZACIJA PROJEKTA

## BIM Plan izvršenja - BEP

## Level of Development

**2017** LEVEL OF DEVELOPMENT SPECIFICATION PART I  
BIMFORUM  
November 2017

**Milestones/Deliverables**

Model Elements	SD	DD	CD	Const. Coord	Fabrication
Structure					
MEP					
Interior					
Exterior					
Site					
Other					

**PARTICIPATING ORGANIZATIONS**

The American Institute of Architects, AGC of America, BIM-M, NSD, Precast/Prestressed PCI Concrete Institute, USIB, MBMA

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## LOD Spec 2017 Part I

Version: 2017

November 2017

### For Building Information Models

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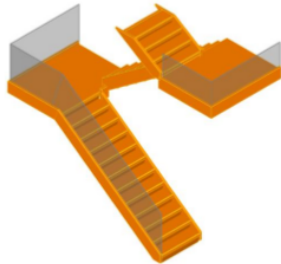


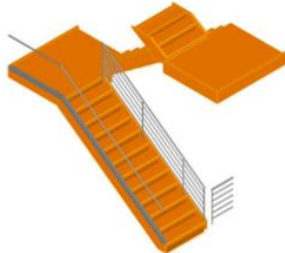
# 1. ORGANIZACIJA PROJEKTA

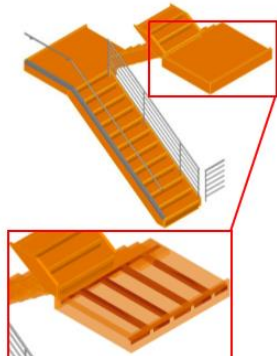
## BIM Plan izvršenja - BEP

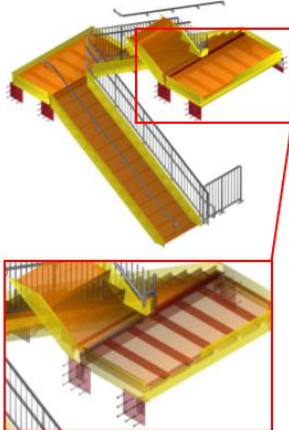
### Level of Development

B1080.10 21-02 10 80 10 Stair Construction  
 Includes: Structural framing for exterior and interior stairs including treads, risers, and landings. Includes fire escapes and ladders.  
 Associated Masterformat Sections: 03 11 23 / 03 30 00 / 03 41 23 / 03 48 19 / 05 51 00  
 05 55 00 / 05 71 00 / 06 43 00

100	See <a href="#">B1080</a>	
200	<p>Generic model element with simplified treads and risers.</p> <p>Nominal overall unit scope shall include:</p> <ul style="list-style-type: none"> <li>Nominal plan dimensions (length, width)</li> <li>Nominal vertical dimensions (levels, landings)</li> </ul>	 <p>50 B1080.10-LOD-200 Stair Construction</p>

300	<p>Major stair support elements are modeled (stringers).</p> <p>Element is accurate as to</p> <ul style="list-style-type: none"> <li>Riser count</li> <li>Riser height</li> <li>Tread width</li> <li>Nosing conditions, including top and bottom</li> <li>Landing geometry</li> </ul>	 <p>51 B1080.10-LOD-300 Stair Construction</p>
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350	<p>Secondary stair support elements are modeled (hangers, brackets, handrail connection points etc.).</p>	 <p>52 B1080.10-LOD-350 Stair Construction</p>
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400	<p>All stair elements are modeled to support fabrication and installation.</p>	 <p>53 B1080.10-LOD-400 Stair Construction</p>
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# 1. ORGANIZACIJA PROJEKTA

## BIM Plan izvršenja - BEP

Uniformat

UniFormat Level					
1	2	3	4		LOD
A				<b>SUBSTRUCTURE</b>	350
A	10			<b>Foundations</b>	350
A	10	10		Standard Foundations	350
A	10	10	.10	Wall Foundations	350
A	10	10	.30	Column Foundations	350
A	10	20		Special Foundations	350
A	10	20	.80	Grade Beams	350
A	20			<b>Subgrade Enclosures</b>	350
A	20	10		Walls for Subgrade Enclosures	350
A	40			<b>Slabs-on-Grade</b>	350
A	40	10		Standard Slabs-on-Grade	350
A	40	20		Structural Slabs-on-Grade	350
B				<b>SHELL</b>	350
B	10			<b>Superstructure</b>	350
B	10	10		Floor Construction	350
B	10	10	.10	Floor Structural Frame	350
B	10	10	.10	Concrete	350
B	10	10	.10	Masonry	350
B	10	10	.10	Steel Framing Columns	350
B	10	10	.10	Steel Framing Beams	350



## 2. SADRŽAJ PROJEKTA



## 2. SADRŽAJ PROJEKTA

Broj modela i veličina datoteka

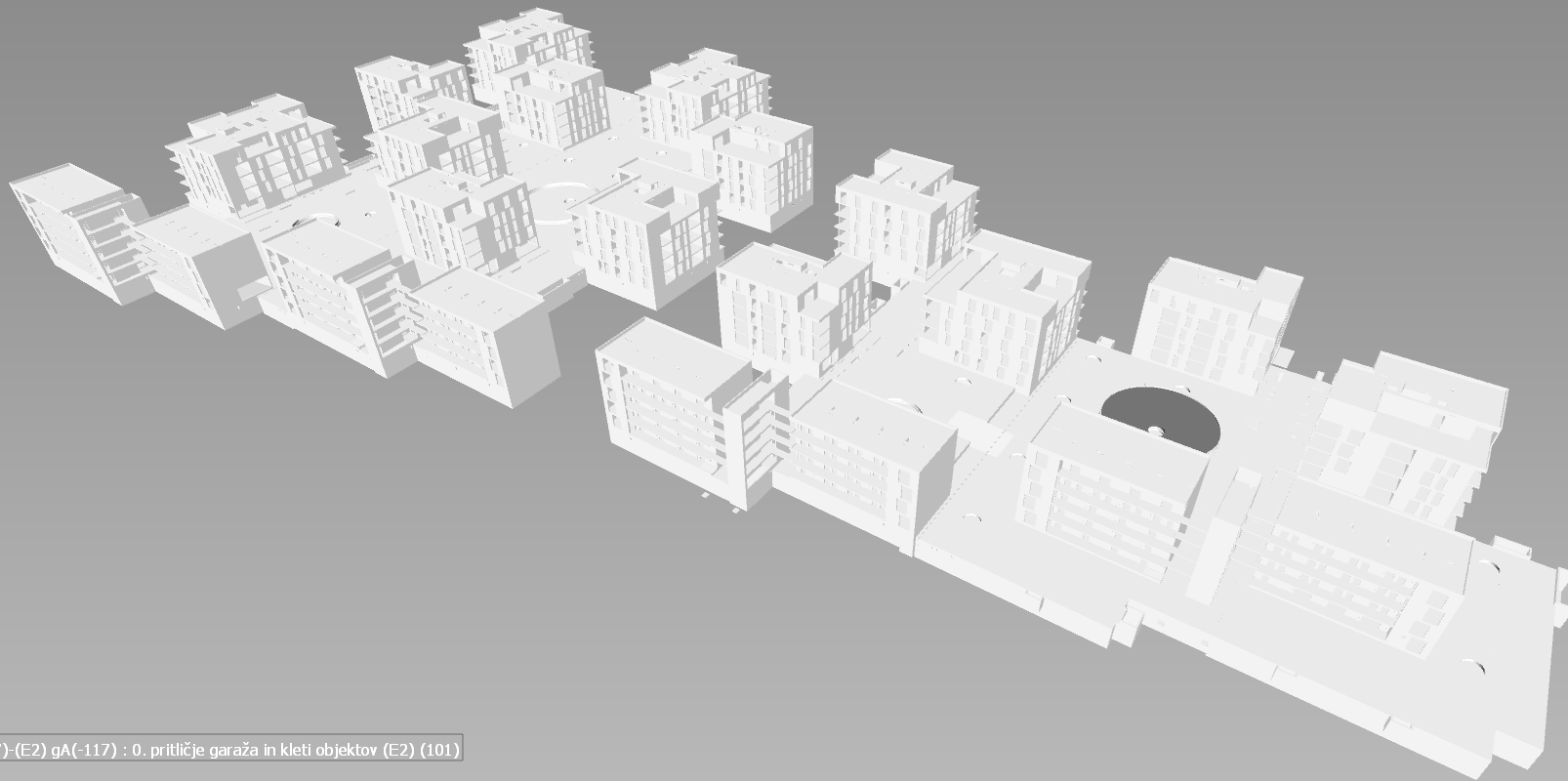
Disciplina	Orig. format	Broj modela	Prosječna veličina modela	IFC (broj modela)
Arhitektura	.rvt	20 modela	220 MB	20 modela
Konstrukcije	.rvt	20 modela	30 MB	20 modela
Strojarske instalacije	.rvt	20 modela	58 MB	20 modela
Elektro instalacije	.rvt	20 modela	25 MB	20 modela
Građevinska jama	.rvt	1 model	14 MB	1 model
Urbana oprema	.rvt	2 modela	165 MB	2 modela
Hortikultura	.rvt	2 modela	45 MB	2 modela
Komunalna infrastruktura	civil3D	2 modela	18 MB	2 modela
Prometnice i vanj.uređenje	Sewer+	2 modela	4 MB	2 modela
Združeni model E2	.nwd	1 model	200 MB	-
Združeni model E3	.nwd	1 model	115 MB	-
Združeni model E2 i E3	.nwd	1 model	275 MB	-
<b>Ukupno:</b>		<b>92 orig.modela + 89 IFC =</b>		<b>181 model</b>





## 2. SADRŽAJ PROJEKTA

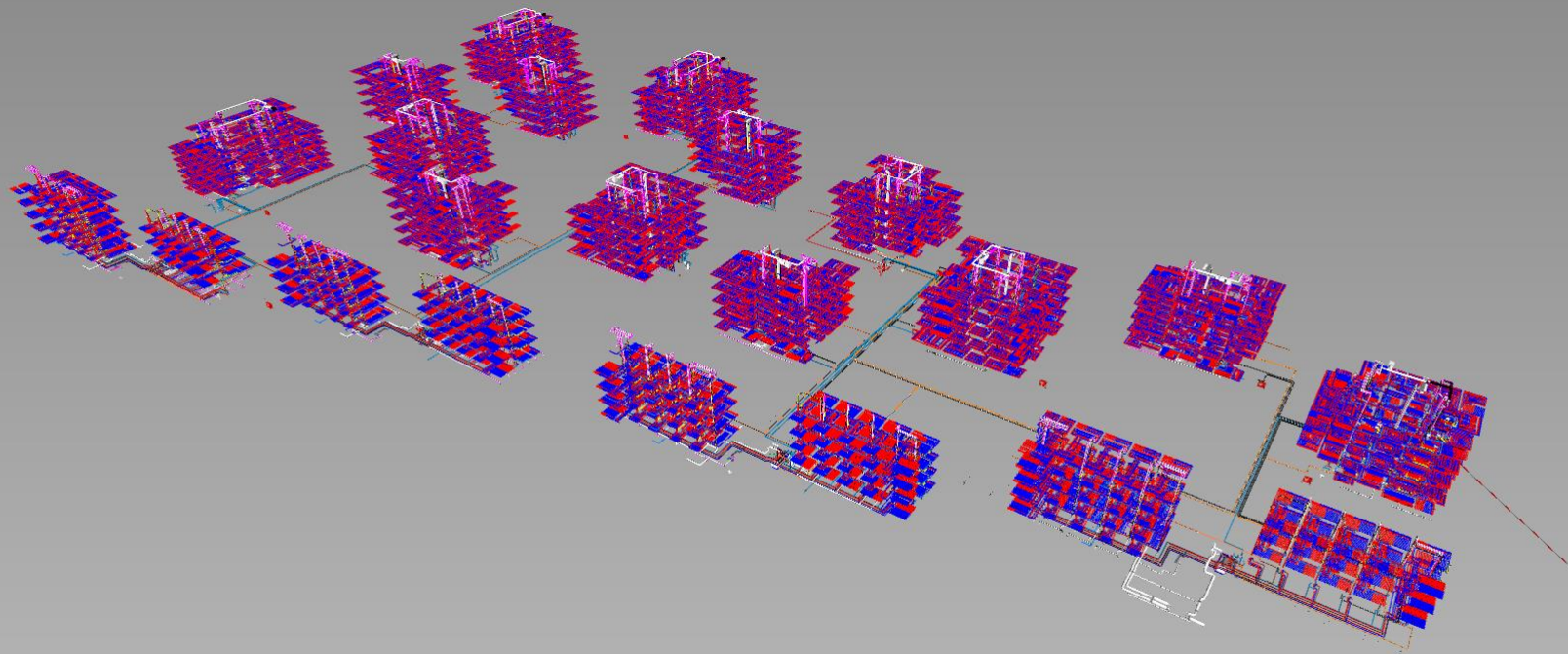
Federated BIM model - **KONSTRUKCIJE**



(E2) g1(-57)-(E2) gA(-117) : 0. pritličje garaža in kleti objektov (E2) (101)

## 2. SADRŽAJ PROJEKTA

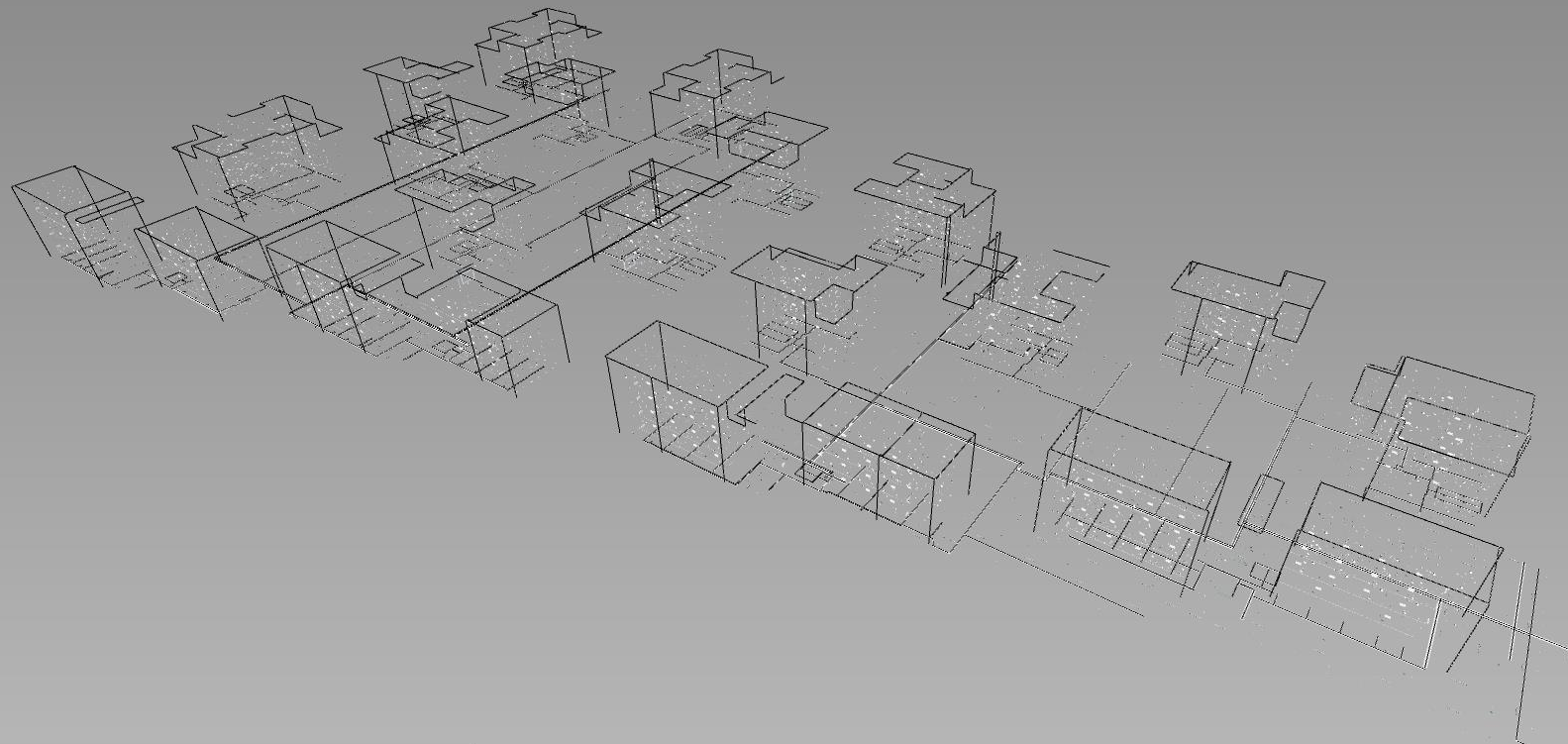
Federated BIM model - STROJARSTVO



(E2) g1(-57)-(E2) gA(-117) : 0. pritličje garaža in kleti objektov (E2) (101)

## 2. SADRŽAJ PROJEKTA

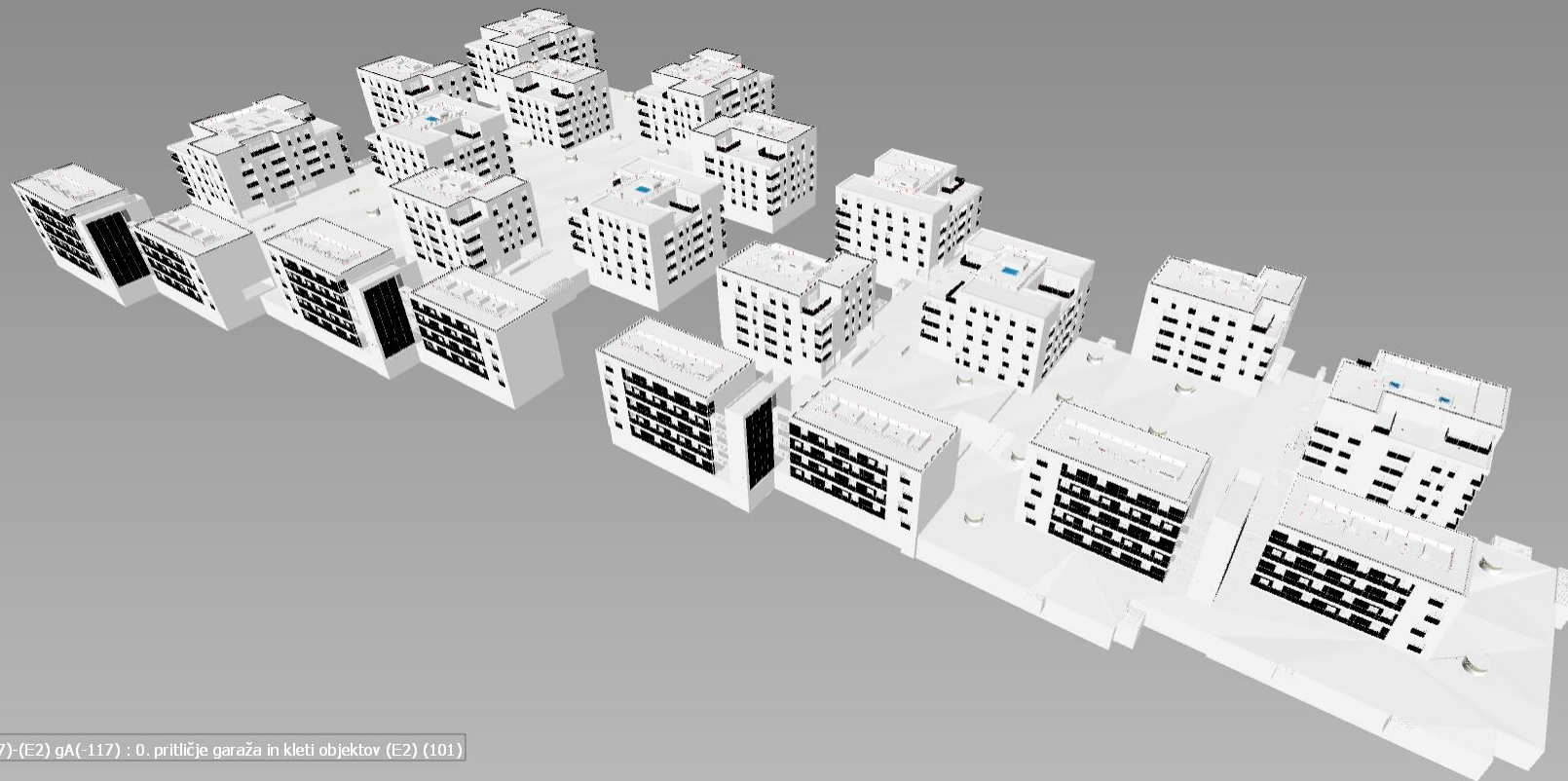
### Federated BIM model - ELEKTRO INSTALACIJE



(E2) g1(-57)-(E2) gA(-117) : 0. pritličje garaža in kleti objektov (E2) (101)

## 2. SADRŽAJ PROJEKTA

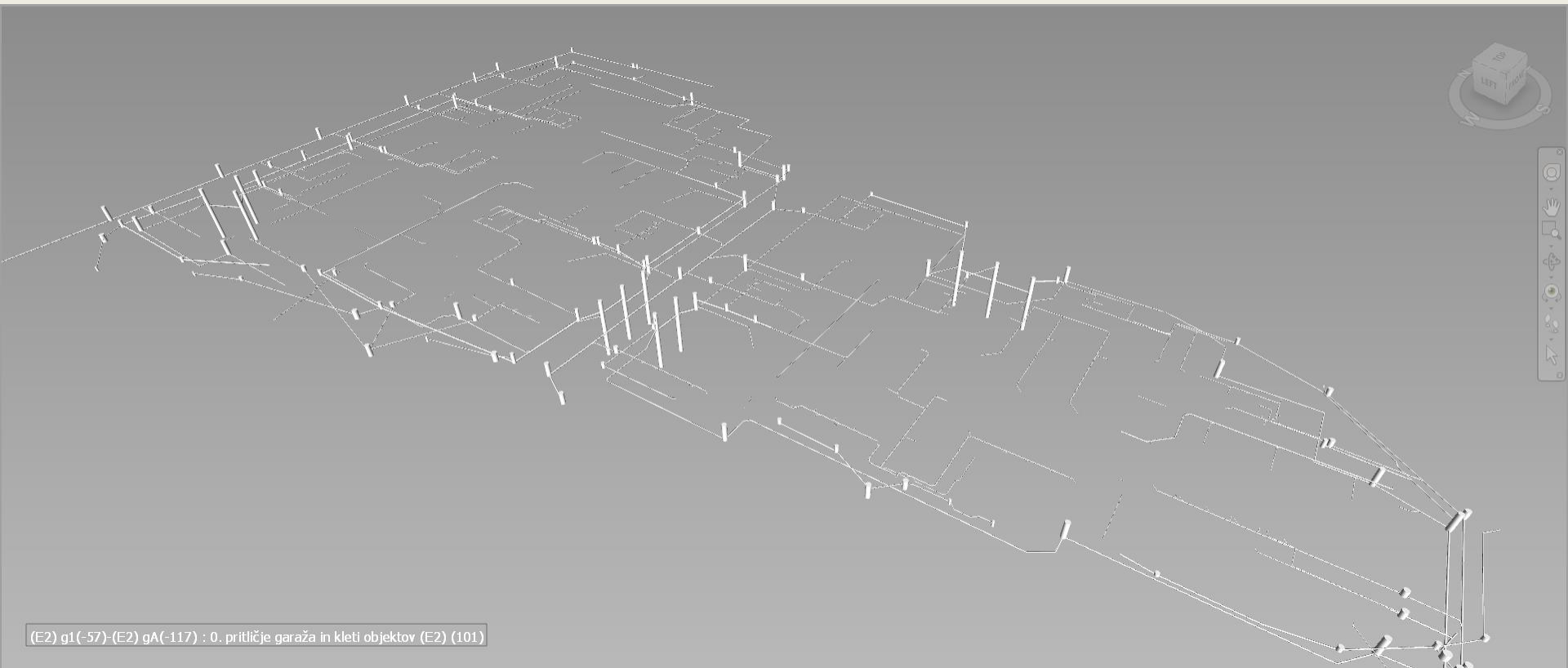
Federated BIM model - ARHITEKTURA



(E2) g1(-57)-(E2) gA(-117) : 0. pritličje garaža in kleti objektov (E2) (101)

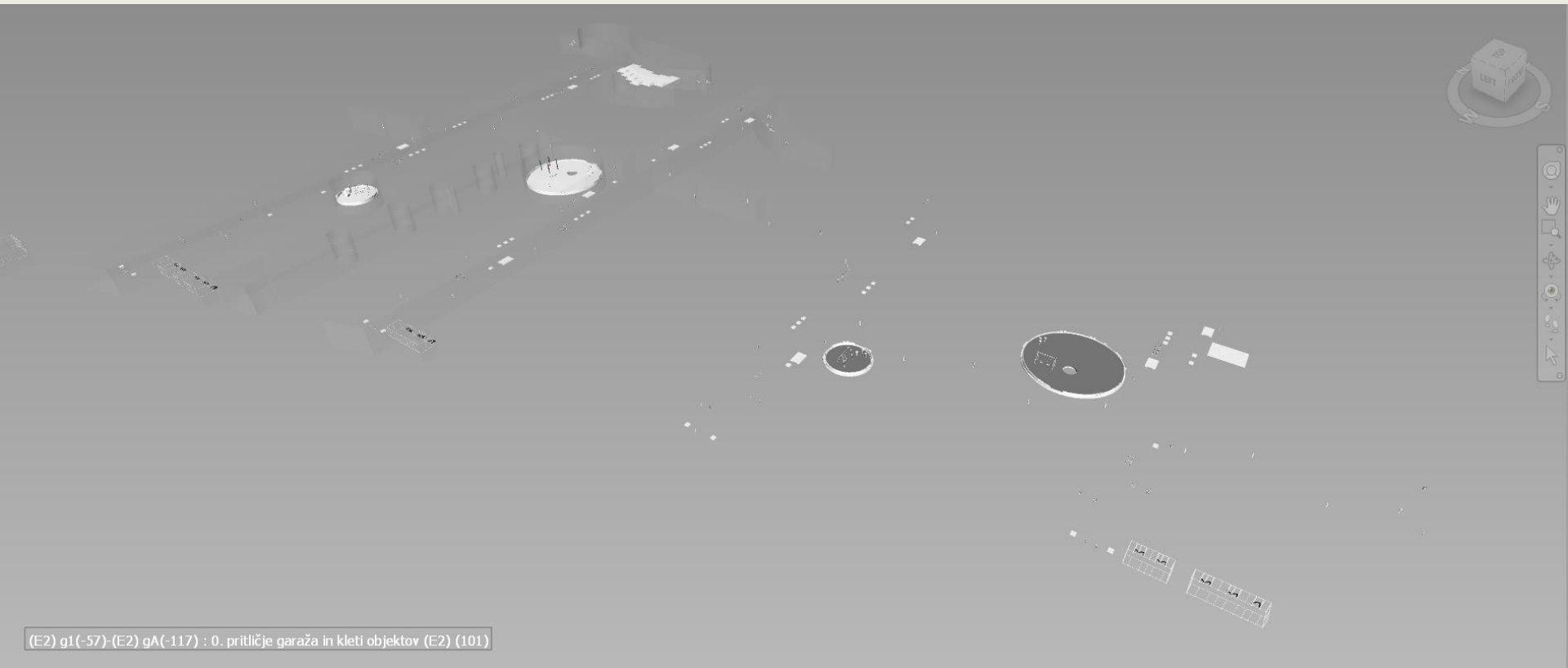
## 2. SADRŽAJ PROJEKTA

Federated BIM model - **KOMUNALNA INFRASTRUKTURA**



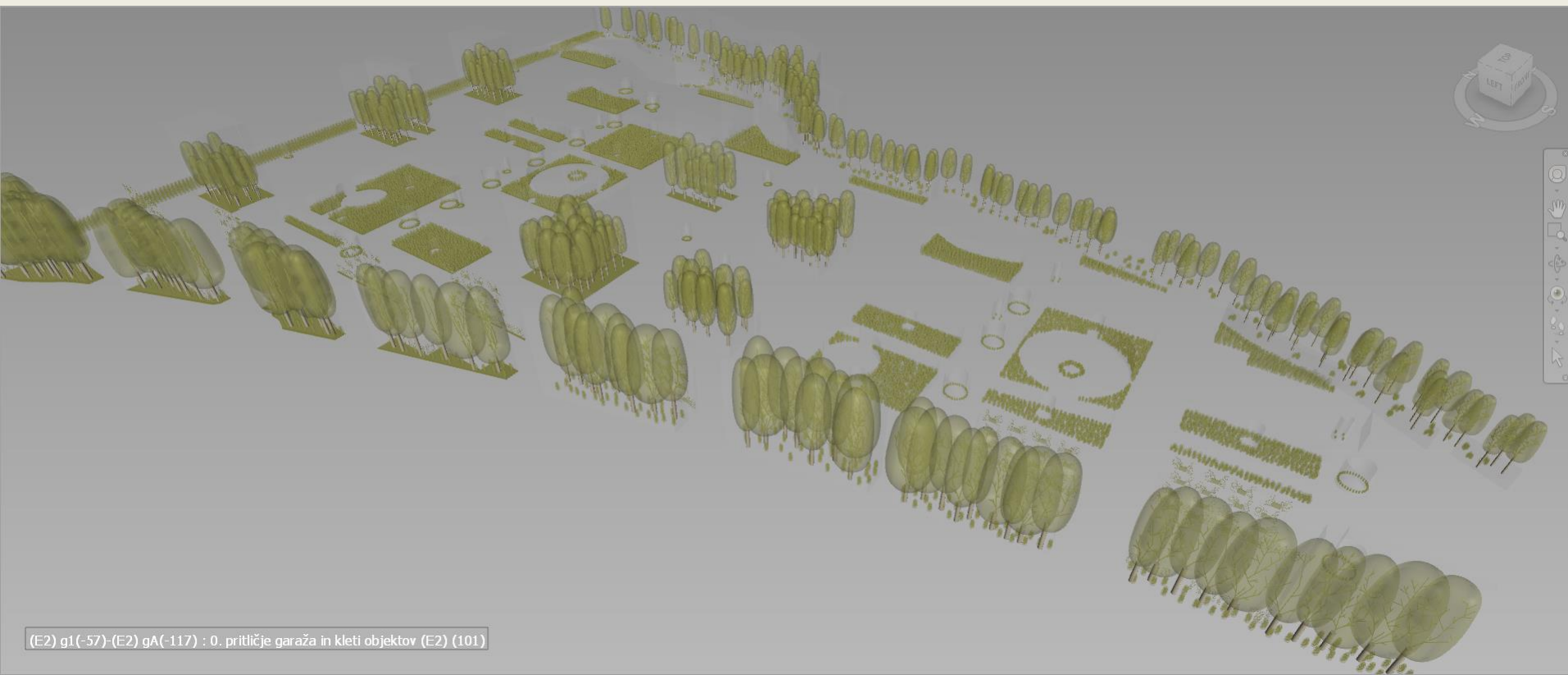
## 2. SADRŽAJ PROJEKTA

Federated BIM model - **URBANA OPREMA**



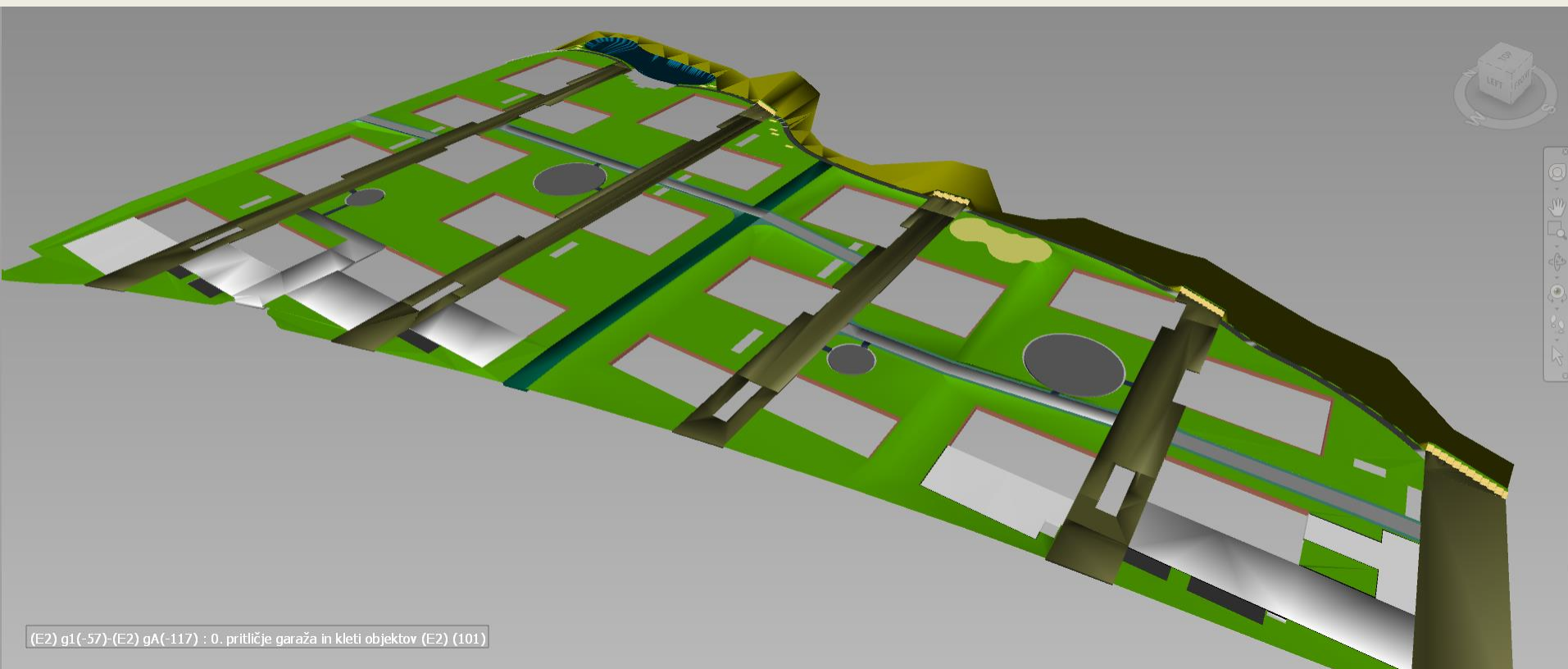
## 2. SADRŽAJ PROJEKTA

Federated BIM model - VANJSKO UREĐENJE



## 2. SADRŽAJ PROJEKTA

Federated BIM model - PROMETNICE





## 2. SADRŽAJ PROJEKTA

Federated BIM model - SVE ZAJEDNO



(E2) g1(-57)-(E2) gA(-117) : 0. pritičje garaža in kleti objektov (E2) (101)

### 3. KONTROLA I KOORDINACIJA PROJEKTA

- Provjera softvera i softverskih verzija
- Kontrola dostavljenih IFC modela
- Kontrola imenovanja dostavljenih datoteka
- Vizualna kontrola
- Kontrola usklađenosti CAD i BIM
- Kontrola pripadnosti elemenata odgovarajućim razinama
- Analiza kolizija
- Kontrola usvojenosti i točnosti COBie parametara
- Kontrola usvojenosti i točnosti Unifomat parametara
- Kontrola stupnja implementiranosti LOD-a
- Kontrola sustava u BIM modelu
- Kontrola količine elemenata
- Kontrola površina i prostorija
- Kontrola pripremljenosti BIM modela za fazu izvođenja
- Kontrola pripremljenosti BIM modela za FM



# 3. KONTROLA I KOORDINACIJA PROJEKTA

## Clash Detection analize

Autodesk Navisworks Manage 2018 (NOT FOR RESALE) M.nwd

Clash Detective

ARC Walls v MEP Pipes

Last Run: Tuesday, October 2, 2018 4:22:35 PM  
Clashes - Total: 52 (Open: 52 Closed: 0)

Name	Status	Clashes	New
ARC Walls v MEP Pipes	Done	52	0
ARC Floors v MEP Pipes	Done	22	0
ARC Walls v MEP Ducts	Done	45	0
ARC Roofs v MEP Ducts	Done	17	0

Selection A:

- Stair Rails
- Stair Runs
- Topography
- Windows
- Revit MEP (N42 Clash Tests (popravljeno))
- Revit Structure (N42 Clash Tests (popravljeno))
- IFC Search Sets (N42 Clash Tests (popravljeno))

Selection B:

- Nurse Call Devices
- Pipe Accessories
- Pipe Fittings
- Plumbing Fixtures
- Security Devices
- Sprinklers
- Telephone Devices
- Wires
- Revit Structure (N42 Clash Tests (popravljeno))
- IFC Search Sets (N42 Clash Tests (popravljeno))

Settings:

Type: Hard Tolerance: 0.050 m  
Link: None Step (sec): 0.1  
 Composite Object Clashing

Run Test

X: 458861.345 m Y: 100223.049 m Z: 329.735 m



# 3. KONTROLA I KOORDINACIJA PROJEKTA

## Clash Detection analize

Autodesk Navisworks Manage 2018 (NOT FOR RESALE) M.nwd

Clash Detective

ARC Walls v MEP Ducts

Last Run: Tuesday, October 2, 2018 4:22:38 PM

Clashes - Total: 45 (Open: 45 Closed: 0)

Name	Status	Clashes	New
ARC Walls v MEP Pipes	Done	52	52
ARC Floors v MEP Pipes	Done	22	22
ARC Walls v MEP Ducts	Done	45	45
ARC Roofs v MEP Ducts	Done	17	17

Name	Status	Level	Grid Intersect
Clash16	New	6atika (306)	b(1)-2
Clash17	New	6atika (306)	c(-2)-2
Clash18	New	6atika (306)	c(-1)-2
Clash19	New	TLORIS 4. TERASE (306)	b-2(2)
Clash20	New	6atika (306)	c(1)-3
Clash21	New	6atika (306)	c(1)-3
Clash22	New	6atika (306)	c(1)-3
Clash23	New	TLORIS 4. TERASE (306)	d-3(-2)
Clash24	New	TLORIS 4. TERASE (306)	d-3(-2)
Clash25	New	TLORIS 4. TERASE (306)	d-3(-2)
Clash26	New	TLORIS 4. TERASE (306)	d-3(-2)
Clash27	New	TLORIS 5. STREHE (306)	b(1)-2
Clash28	New	TLORIS 5. STREHE (306)	b(1)-3
Clash29	New	TLORIS 0. PRITLICJE (308)	b(-1)-3(-4)
Clash30	New	6atika (306)	d(-1)-3
Clash31	New	6atika (306)	b(1)-2
Clash32	New	TLORIS 4. TERASE (306)	b-2(2)
Clash33	New	6atika (306)	d(-1)-3
Clash34	New	TLORIS 5. STREHE (306)	b-3(-4)
Clash35	New	TLORIS 0. PRITLICJE (308)	b-3(-3)

X: 458843.969 m Y: 100258.713 m Z: 322.772 m



# 3. KONTROLA I KOORDINACIJA PROJEKTA

## Clash Detection analize

The screenshot displays the Autodesk Navisworks Manage 2018 interface. The main window shows a 3D model of a clash between a red wall and a green pipe. The left-hand side contains a 'Clash Detective' window with a summary table and a detailed list of clashes.

**Clash Detective Summary Table:**

Name	Status	Clashes	New
ARC Ceilings v MEP Pipes	Done	9	9
ARC Walls v MEP Mechanical Equipment	Done	4	4
ARC Roofs v MEP Duct Fittings	Done	0	0
ARC Walls v MEP Duct Fittings	Done	4	4

**Clash Detective Detailed List:**

Name	Status	Level	Grid Intersection
Clash1	New	TLORIS 0. PRITLICJE (308)	d-2(-1)
Clash2	New	TLORIS 1. NADSTROPJE (308)	d-2(-1)
Clash3	New	TLORIS 3. NADSTROPJE (308)	d-2(-1)
Clash4	New	TLORIS 2. NADSTROPJE (308)	d-2(-1)

**Clash Detective Settings:**

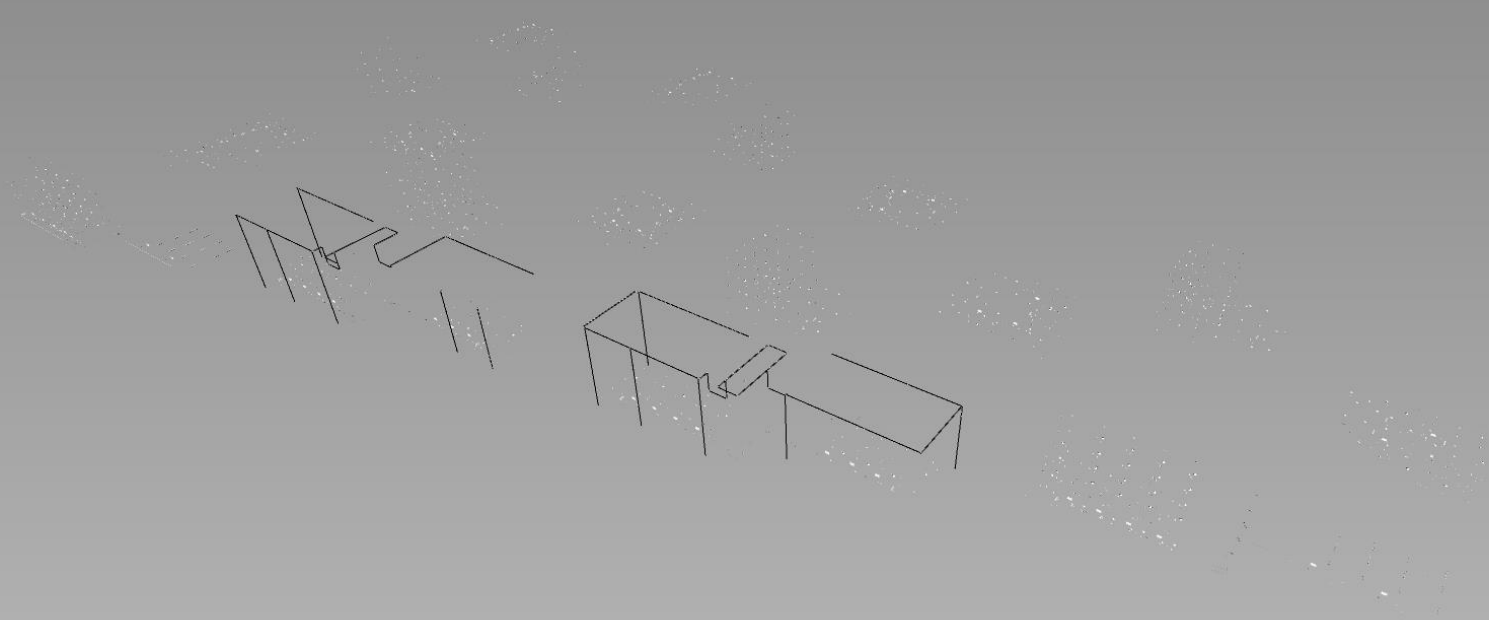
- Highlighting: Item 1 (Red), Item 2 (Green), Use item colors, Highlight all clashes (checked)
- Isolation: Dim Other (checked), Hide Other (checked), Transparent dimming (checked), Auto reveal (unchecked)
- Viewpoint: Auto-update (checked), Animate transitions (unchecked), Focus on Clash (checked)
- Simulation: Show simulation (checked)
- View in Context: All (selected), View (button)

**3D Model Coordinates:** X: 458861.542 m, Y: 100288.020 m, Z: 311.626 m



# 3. KONTROLA i KOORDINACIJA PROJEKTA

Pregled elemenata – pripadnost etaži  
Elektro instalacije

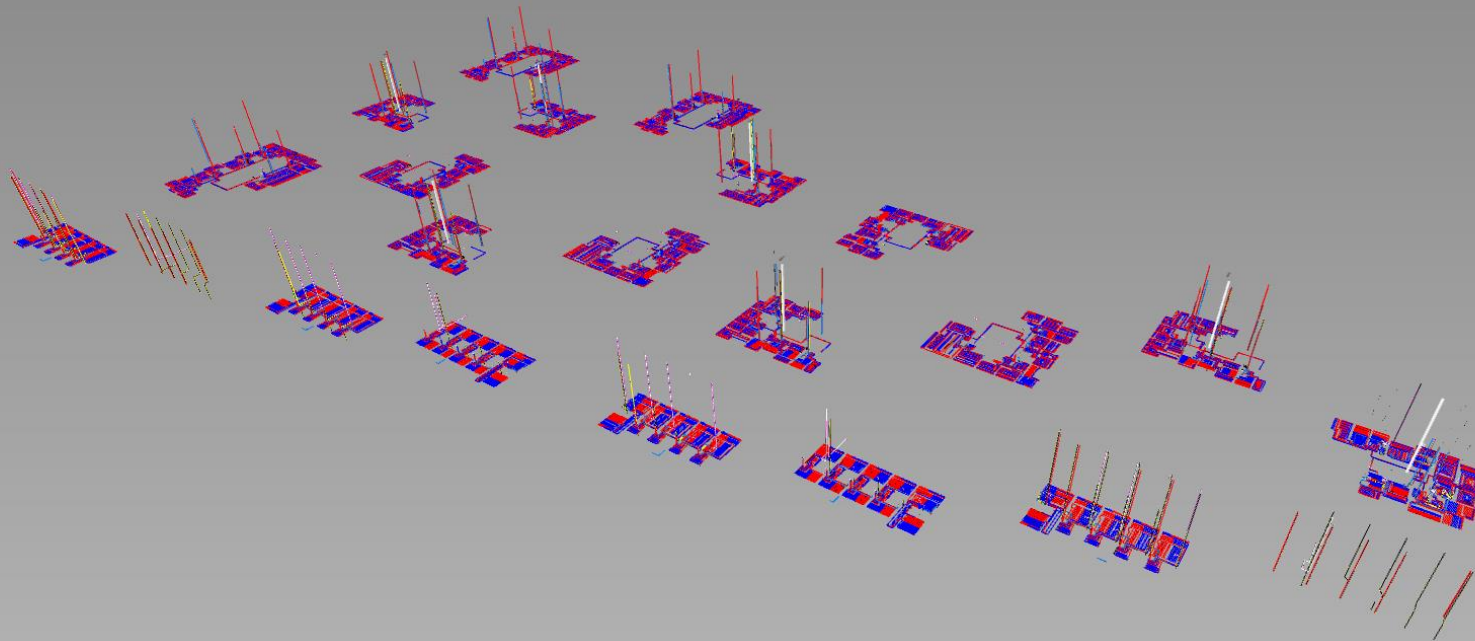


(E2) g1(-57)-(E2) gA(-117) : 0. pritličje garaža in kleti objektov (E2) (101)



# 3. KONTROLA i KOORDINACIJA

Pregled elemenata – pripadnost etaži  
Strojarske instalacije

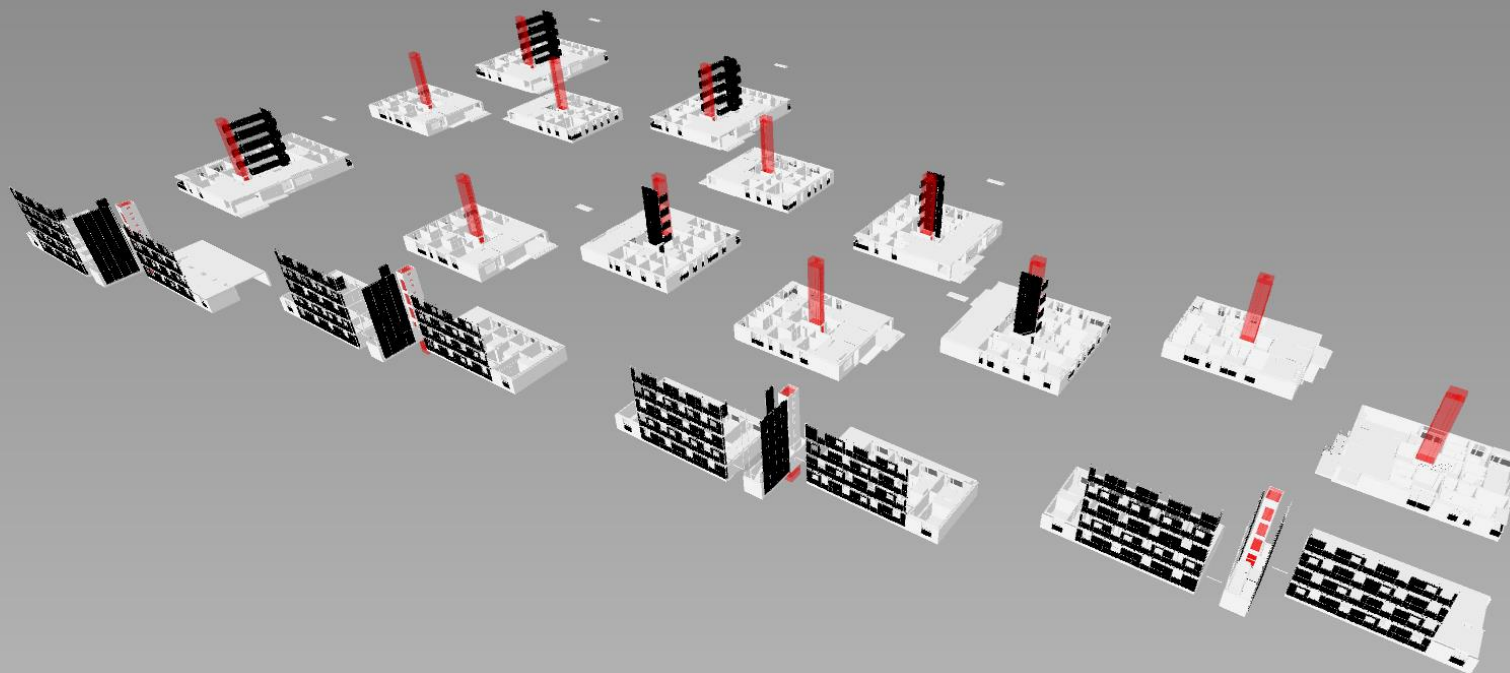


(E2) g1(-57)-(E2) gA(-117) : 0. prtiličje garaža in kleti objektov (E2) (101)



# 3. KONTROLA I KOORDINACIJA

Pregled elemenata – pripadnost etaži  
Arhitektura



(E2) g1(-57)-(E2) gA(-117) : 0. priličje garaža in kleti objektov (E2) (101)





# 4. ZONE

Autodesk COBie Extension for Revit | Zone Manager

## Zone Manager

Create zones, edit their properties, and assign Revit Rooms and Spaces to them.

### Zones

- (Remove)  M1-1N-10-C2 balkon
- ▲ **Stanovanje M1-1N-5-B3**
  - (Remove)  M1-1N-5-B3 bivalni del
  - (Remove)  M1-1N-5-B3 soba
  - (Remove)  M1-1N-5-B3 spalnica
  - (Remove)  M1-1N-5-B3 predsoba
  - (Remove)  M1-1N-5-B3 hodnik
  - (Remove)  M1-1N-5-B3 loža
  - (Remove)  M1-1N-5-B3 kopalnica
  - (Remove)  M1-1N-5-B3 wc
- ▲ **Stanovanje M1-1N-6-C1b**
  - (Remove)  M1-1N-6-C1b otroška soba
  - (Remove)  M1-1N-6-C1b bivalni del
  - (Remove)  M1-1N-6-C1b spalnica
  - (Remove)  M1-1N-6-C1b kopalnica
  - (Remove)  M1-1N-6-C1b wc
  - (Remove)  M1-1N-6-C1b predsoba

### Rooms/Spaces

- M1-0P stopnišče
- M1-1N stopnišče
- M1-1N jasek dvizni vodi
- M1-1N-10-C2 bivalni del
- M1-1N-10-C2 otroška soba
- M1-1N-10-C2 spalnica
- M1-1N-10-C2 wc
- M1-1N-10-C2 kopalnica
- M1-1N-10-C2 predsoba
- M1-1N-10-C2 hodnik
- M1-1N-10-C2 balkon
- M1-1N-5-B3 bivalni del
- M1-1N-5-B3 soba
- M1-1N-5-B3 spalnica
- M1-1N-5-B3 kopalnica
- M1-1N-5-B3 wc
- M1-1N-5-B3 predsoba

**Name** Stanovanje M1-1N-5-B3 ⓘ

**Category** Occupancy Zone ⓘ

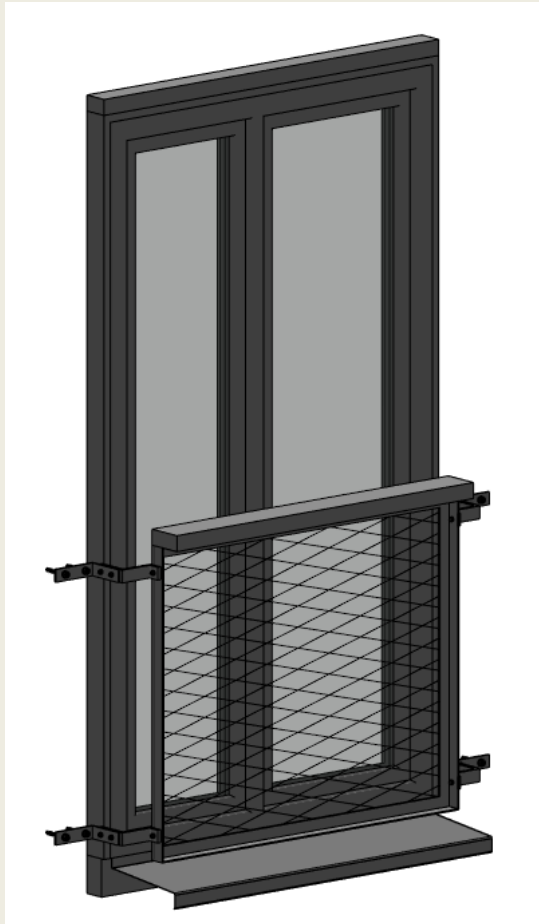
**Description** Stanovanje ⓘ

**CreatedBy** intelika@intelika.hr ⓘ

**CreatedOn** 2018-10-12T20:05:58 ⓘ



# 5. UNIFORMAT PARAMETRI



Type Properties

Family: FRANCOSKO OKNO NA FASADI 01.4 Load...

Type: 01.4 Duplicate... Rename...

Type Parameters

Parameter	Value
COBie.Type.CreatedOn	2019-03-29T11:34:03
COBie.Type.Name	Windows_FRANCOSKO OKNO N
COBie.Type.Category	B2020.10
COBie.Type.Description	Francosko okno na fasadi
COBie.Type.AssetType	Exterior Operating Windows
COBie.Type.WarrantyGuarant	
COBie.Type.WarrantyDuration	
COBie.Type.WarrantyGuarant	
COBie.Type.WarrantyDuration	
COBie.Type.WarrantyDuration	
COBie.Type.WarrantyDuration	
COBie.Type.DurationUnit	
COBie.Type.WarrantyDescripti	
COBie.Type.NominalLength	135.00
COBie.Type.NominalWidth	8.00
COBie.Type.NominalHeight	239.00
Classification.UniFormat.II.Nu	B2020.10
Classification.OmniClass.21.N	
Classification.OmniClass.21.D	

<< Preview OK Cancel Apply

Properties

FRANCOSKO OKNO NA FASADI 01.4

Windows (1) Edit Type

Phasing

Phase Created	Obstojece
Phase Demolished	None

IFC Parameters

IfcGUID	0DmkheZnH0mRM1Q2Myg4m
---------	-----------------------

Data

COBie	<input checked="" type="checkbox"/>
COBie.ExternalIdentifier	
COBie.CreatedBy	arh@dekleva-gregoric.com
COBie.CreatedOn	2019-03-29T11:34:01
COBie.Component.Name	Windows_FRANCOSKO OKN...
COBie.Component.Space	n/a,M1-T-23-Ct1_bivalni del_...
COBie.Component.Descripti...	Francosko okno na fasadi
COBie.Component.SerialNu...	
COBie.Component.Installati...	
COBie.Component.Warranty...	
COBie.Component.TagNum...	
COBie.Component.BarCode	
COBie.Component.AssetId...	
COBie.Component.Area	
COBie.Component.Length	

Other

Window position in wall	0.00
Head Height	237.50
krilo	Levo

Properties help Apply



# 6. COBie PARAMETRI

## COBie FACILITY

Name	CreatedBy	CreatedOn	Category	ProjectName	SiteName
Objekt M1	intelika@intelika.hr	2018-10-23T10:50:11	EN_45_10_47	STANOVANJSKA SOSESKA NOVO BRDO V OBMOČJU UREJANJA OPPN 252, FUNKC. ENOTA E2 IN E3	Stanovanjske soseske in večstanovanjskih objektov z zunanjo ureditvijo na območju Brdo 2, Ljubljana

## COBie FLOOR

Name	CreatedBy	CreatedOn	Category	ExtSystem	ExtObject	ExtIdentifier	Description	Elevation	Height
0. pritličje	intelika@intelika.hr	2018-10-23T10:50:11	Floor	Autodesk Revit 2018, Build: 20180423_1000(x6)	Levels	462c152e-fe7e-4356-8fe4-88de97d8078f-	Vhod, vetrolov, skupni prostor, kolesarnica;	15	288
1. nadstropje	intelika@intelika.hr	2018-10-23T10:50:11	Floor	Autodesk Revit 2018, Build: 20180423_1000(x6)	Levels	de01be87-470a-46a8-a179-304dfd4d9aac-	Stanovanja, lože; stopnišče, dvigalo, dvžni vodi,	303	288
2. nadstropje	intelika@intelika.hr	2018-10-23T10:50:11	Floor	Autodesk Revit 2018, Build: 20180423_1000(x6)	Levels	de01be87-470a-46a8-a179-304dfd4d9aac-	Stanovanja, lože; stopnišče, dvigalo, dvžni vodi,	591	288
3. nadstropje	intelika@intelika.hr	2018-10-23T10:50:11	Floor	Autodesk Revit 2018, Build: 20180423_1000(x6)	Levels	de01be87-470a-46a8-a179-304dfd4d9aac-	Stanovanja, lože; stopnišče, dvigalo, dvžni vodi,	879	288
4. terasa	intelika@intelika.hr	2018-10-23T10:50:11	Floor	Autodesk Revit 2018, Build: 20180423_1000(x6)	Levels	de01be87-470a-46a8-a179-304dfd4d9aac-	Stanovanja, terase; stopnišče, dvigalo, dvžni vodi,	1167	288
5. streha	intelika@intelika.hr	2018-10-23T10:50:11	Floor	Autodesk Revit 2018, Build: 20180423_1000(x6)	Levels	39c63038-9d47-46d5-ad44-c5951f853e7e-	jašek dvigala, inštalacijski jašek	1455	65
referenčna točka za povezovanje modelov	intelika@intelika.hr	2018-10-23T10:50:11	Floor	Autodesk Revit 2018, Build: 20180423_1000(x6)	Levels	24d02344-a2a2-491c-8b50-59375462e369-	-	0	n/a



# 6. COBie PARAMETRI

## COBie SPACE

Name	Created By	Created On	Category	FloorName	Description	ExtSystem	ExtObject	ExtIdentifier	RoomTag	UsableHeight	GrossArea	NetArea
M1-P-1-C2_bivalni del	intelika@intelika.hr	2018-10-2	SL_45_10_49	0. pritličje	bivalni del	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-P-1-C2	268	24.2794	24.2794
M1-P-1-C2_otroška	intelika@intelika.hr	2018-10-2	SL_45_10_09	0. pritličje	otroška soba	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-P-1-C2	268	11.025	11.025
M1-P-1-C2_spalnica	intelika@intelika.hr	2018-10-2	SL_45_10_09	0. pritličje	spalnica	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-P-1-C2	268	11.1746	11.1746
M1-P-1-C2_wc	intelika@intelika.hr	2018-10-2	SL_35_80_89	0. pritličje	wc	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-P-1-C2	268	1.6225	1.6225
M1-P-1-C2_kopalnica	intelika@intelika.hr	2018-10-2	SL_35_80_08	0. pritličje	kopalnica	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-P-1-C2	268	4.5526	4.5526
M1-P-1-C2_predsoba	intelika@intelika.hr	2018-10-2	SL_90_10_94	0. pritličje	predsoba	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-P-1-C2	268	3.8652	3.8652
M1-P-1-C2_hodnik	intelika@intelika.hr	2018-10-2	SL_90_10_36	0. pritličje	hodnik	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-P-1-C2	268	3.055	3.055
M1-1N-7-C2_bivalni del	intelika@intelika.hr	2018-10-2	SL_45_10_49	1. nadstropje	bivalni del	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-1N-7-C2	268	24.2794	24.2794
M1-1N-7-C2_otroška	intelika@intelika.hr	2018-10-2	SL_45_10_09	1. nadstropje	otroška soba	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-1N-7-C2	268	11.025	11.025
M1-1N-7-C2_spalnica	intelika@intelika.hr	2018-10-2	SL_45_10_09	1. nadstropje	spalnica	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-1N-7-C2	268	11.1746	11.1746
M1-1N-7-C2_wc	intelika@intelika.hr	2018-10-2	SL_35_80_89	1. nadstropje	wc	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-1N-7-C2	268	1.6225	1.6225
M1-1N-7-C2_kopalnica	intelika@intelika.hr	2018-10-2	SL_35_80_08	1. nadstropje	kopalnica	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-1N-7-C2	268	4.5526	4.5526
M1-1N-7-C2_predsoba	intelika@intelika.hr	2018-10-2	SL_90_10_94	1. nadstropje	predsoba	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-1N-7-C2	268	3.8652	3.8652
M1-1N-7-C2_hodnik	intelika@intelika.hr	2018-10-2	SL_90_10_36	1. nadstropje	hodnik	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-1N-7-C2	268	3.055	3.055
M1-2N-13-C2_bivalni del	intelika@intelika.hr	2018-10-2	SL_45_10_49	2. nadstropje	bivalni del	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-2N-13-C2	308	24.2794	24.2794
M1-2N-13-C2_otroška	intelika@intelika.hr	2018-10-2	SL_45_10_09	2. nadstropje	otroška soba	Autodesk Revit 2018	Rooms	4f03cbad-dd67-4163	M1-2N-13-C2	308	11.025	11.025







# 7. FINALNA ISPORUKA



SSRS Brdo E2 in E3

SSRS Brdo E2 in E3 > 01 - Arhitektura > 01 - BIM

[Upload](#) [New](#)

Name	Owner	Type	Size	Last Updated
SBE-DGA-E2-3D-AR-0001.ifc <span>V2</span>	Martina Pavlović	CAD File	55,3 MB	Oct 24, 2018
SBE-DGA-E2-3D-AR-0001.ifc.log <span>V2</span>	Martina Pavlović	CAD File	1.4 KB	Oct 24, 2018
SBE-DGA-E2-3D-AR-0001.rvt <span>V4</span>	Anamarija Fink	Revit Files	239.9 MB	Oct 24, 2018
SBE-DGA-E3-3D-AR-0001.ifc <span>V2</span>	Martina Pavlović	CAD File	39.2 MB	Oct 24, 2018
SBE-DGA-E3-3D-AR-0001.ifc.log <span>V2</span>	Martina Pavlović	CAD File	1.4 KB	Oct 24, 2018
SBE-DGA-E3-3D-AR-0001.rvt <span>V4</span>	Anamarija Fink	Revit Files	113.6 MB	Oct 24, 2018
SBE-DGA-L1-3D-AR-0001.ifc <span>V1</span>	Martina Pavlović	CAD File	74.7 MB	Oct 24, 2018
SBE-DGA-L1-3D-AR-0001.ifc.log <span>V1</span>	Martina Pavlović	CAD File	1.4 KB	Oct 24, 2018
SBE-DGA-L1-3D-AR-0001.rvt <span>V2</span>	Martina Pavlović	Revit Files	141.5 MB	Oct 24, 2018
SBE-DGA-L2-3D-AR-0001.ifc <span>V1</span>	Martina Pavlović	CAD File	74.8 MB	Oct 24, 2018
SBE-DGA-L2-3D-AR-0001.ifc.log <span>V1</span>	Martina Pavlović	CAD File	1.4 KB	Oct 24, 2018
SBE-DGA-L2-3D-AR-0001.rvt <span>V2</span>	Martina Pavlović	Revit Files	138.8 MB	Oct 24, 2018
SBE-DGA-L3-3D-AR-0001.ifc <span>V1</span>	Martina Pavlović	CAD File	74.8 MB	Oct 24, 2018
SBE-DGA-L3-3D-AR-0001.ifc.log <span>V1</span>	Martina Pavlović	CAD File	1.4 KB	Oct 24, 2018







# 7. FINALNA ISPORUKA



SSRS Brdo E2 in E3

SSRS Brdo E2 in E3 > 10a - Združeni modeli

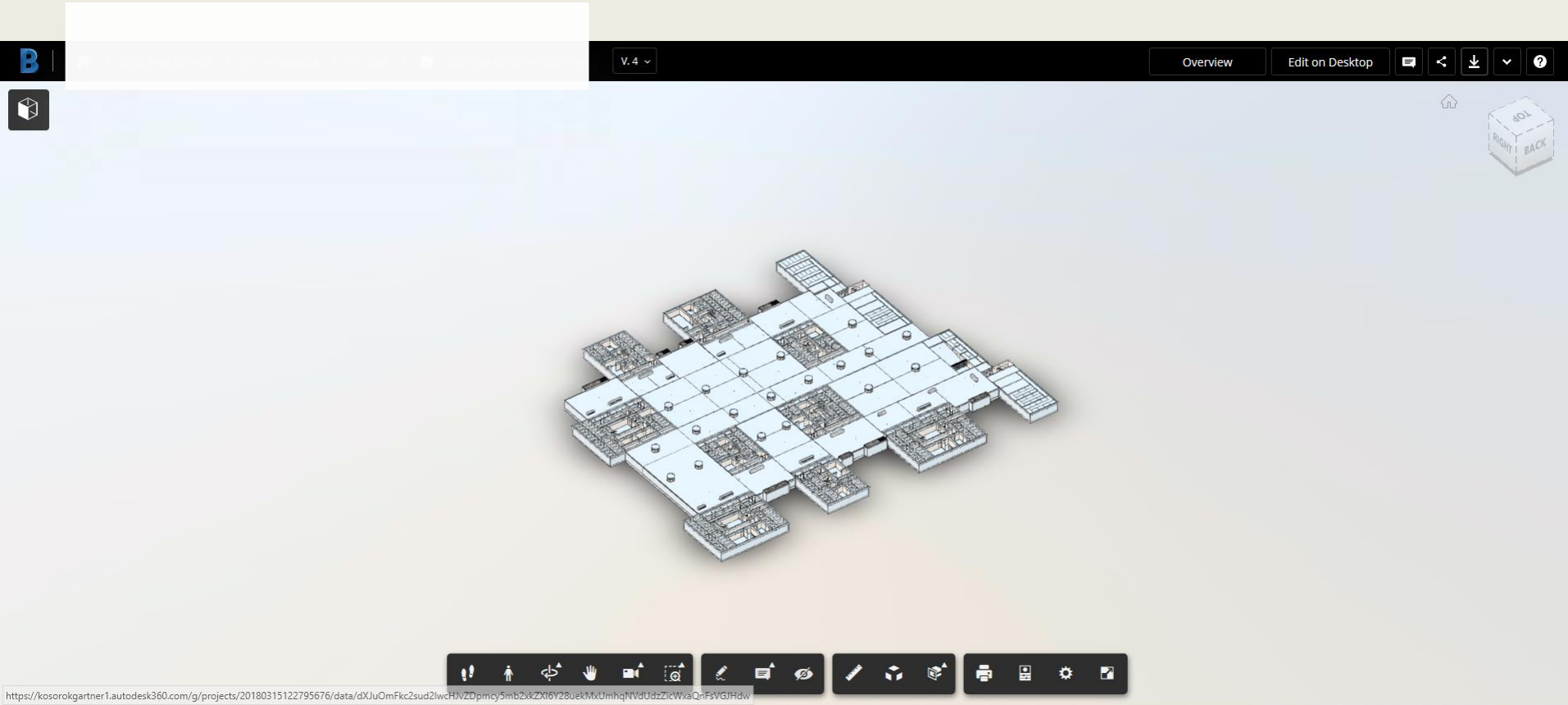
[Upload](#) [New](#)  

Name ▲	Owner	Type	Size	Last Updated
 arh_konstr_el.i_str.i.	Anamarija Fink	Folder		Oct 27, 2018
 SBE-STA-E2-3D-ZM-0001.nwd <span>V1</span>	Martina Pavlović	Navisworks files	202.7 MB	Oct 26, 2018
 SBE-STA-E2-3D-ZM-0001.nwf <span>V1</span>	Martina Pavlović	Others	8.9 KB	Oct 26, 2018
 SBE-STA-E3-3D-ZM-0001.nwd <span>V1</span>	Martina Pavlović	Navisworks files	110.9 MB	Oct 26, 2018
 SBE-STA-E3-3D-ZM-0001.nwf <span>V1</span>	Martina Pavlović	Others	6.3 KB	Oct 26, 2018





# 7. FINALNA ISPORUKA



## 8. PROBLEMI I PREDNOSTI

### PROBLEMI:

- Izmjene na projektu 😊
- COBie format i finalan prikaz parametra
- LOD 350 na svim elementima u svim strukama
- Prostorije u svim modelima
- Modeliranje elemenata koji nisu dio trenutne faze radova

### PREDNOSTI:

- Jednostavno i brzo detektiranje promjena i pogreški na projektu
- Vizualizacija projekta
- Jednostavna usporedba između verzija projekta
- Bolja i kvalitetnija komunikacija i kolaboracija između struka



# Hvala na pažnji!

**Martina Pavlović Cerinski**, *mag.ing.aedif*

Tehnički direktor; BIM Menadžer

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