

# Cloud Enabled Collaboration in Infrastructure Projects

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Sr. Technical Specialist & Product Manager

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# Collaboration

# Collaboration

- Arrangement in which 2 or more parties work jointly towards a common goal
  - Draftsman/Designer – Project Manager
  - Customer – Client
- Effective method of transferring ‘know how’ among individuals
  - Project deliveries (plan, section and profile sheets, 3D models)
- Conflict Resolution Strategy to seek solutions advantageous to all parties
  - RFI
  - Issues

# Cloud Collaboration

# Cloud Collaboration

- Sharing and co-authoring computer files through the use of cloud computing hereby documents are uploaded to a central "cloud" for storage, where they can then be accessed by others
  - Off Premise storage of documents and other data types
  - Enable 2 or more people to work on the same project
  - Access 24/7



The background of the slide features a complex, organic wireframe mesh pattern in a light gray color. This pattern is composed of numerous interconnected lines forming irregular, cell-like shapes. A solid blue horizontal bar spans the width of the slide, positioned in the lower half. The text 'The Technology' is written in white, sans-serif font on the left side of this blue bar.

# The Technology

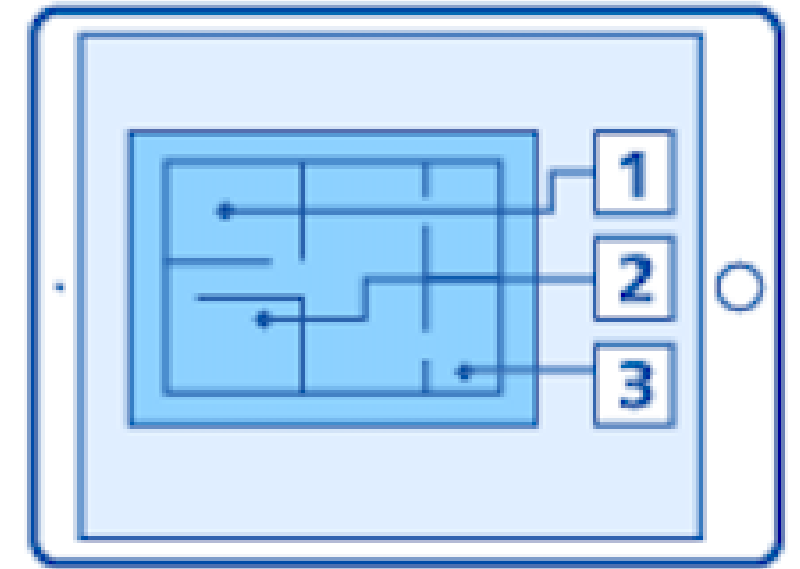
# Technologies in use today



Cloud-based  
collaboration



PDF software



Field apps

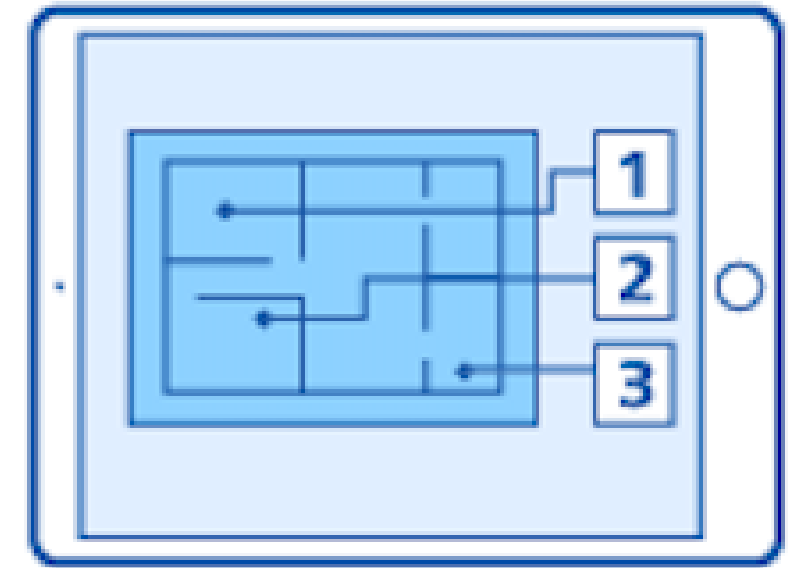
# There's an app for that...



- Cloud storage
- File sharing
- Access rights
- Mobile access
- Version control



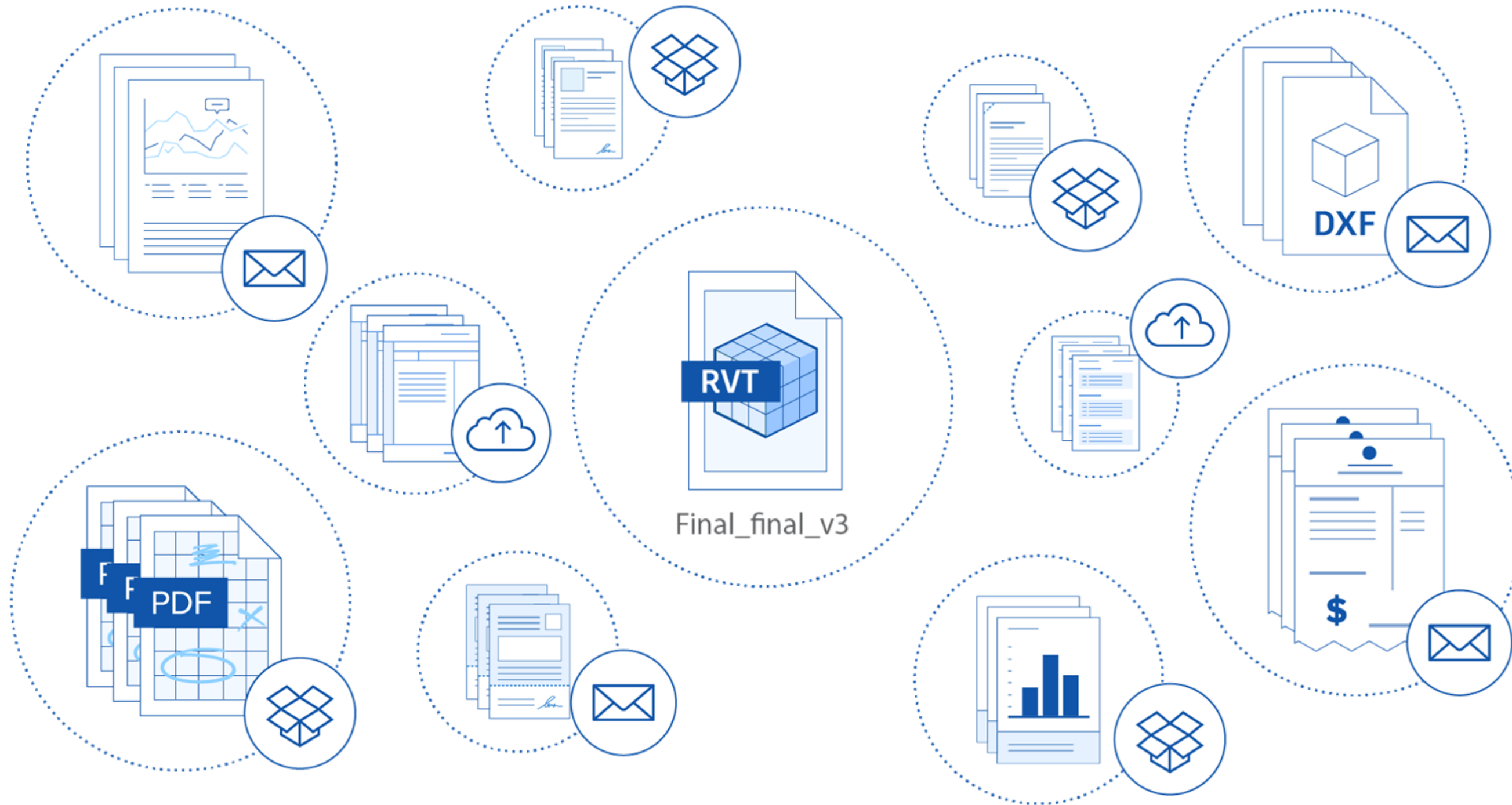
- PDF creation/viewing
- CAD to PDF conversion
- Markups
- Tagging/organizing
- OCR



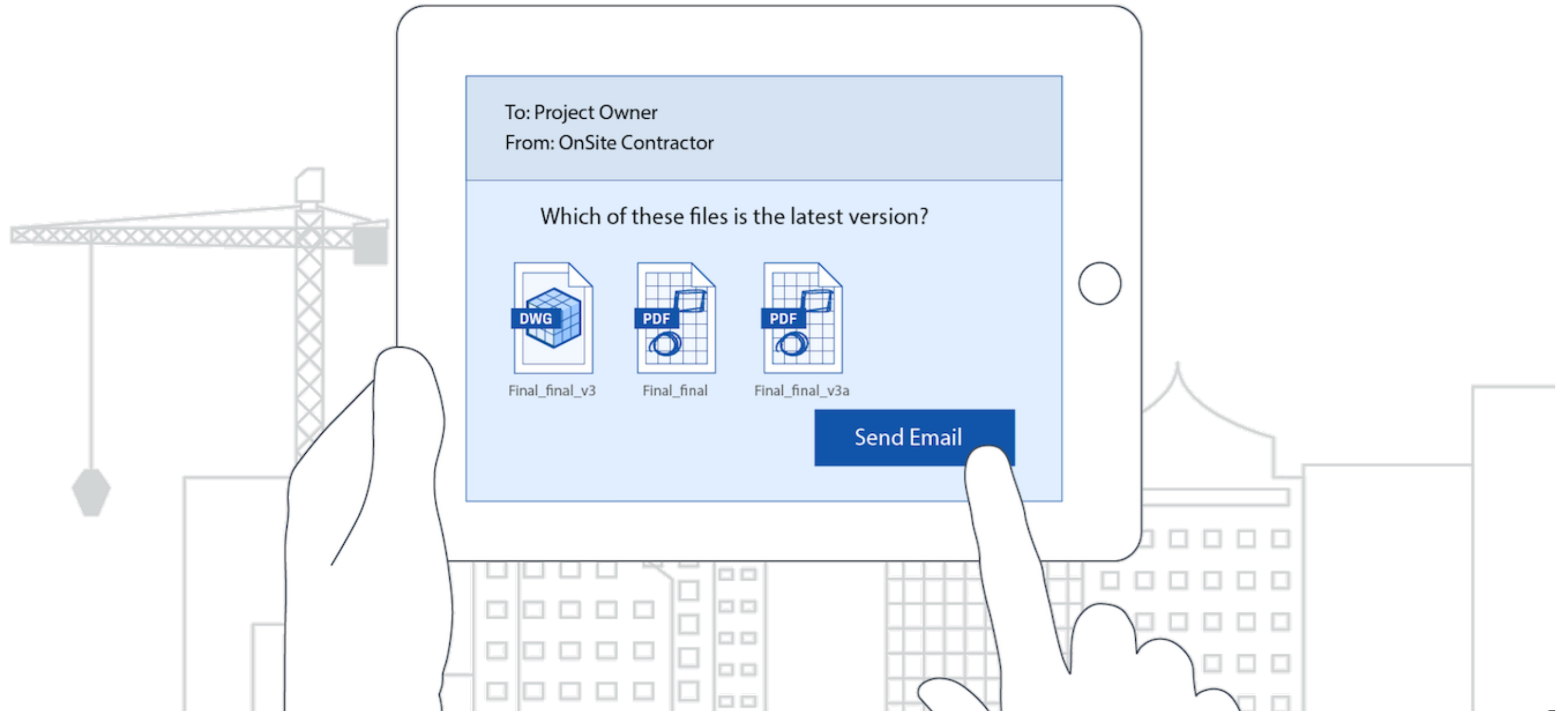
- Issue creation
- Plan viewers
- Offline access
- Markups
- Reports



# Resulting information siloes



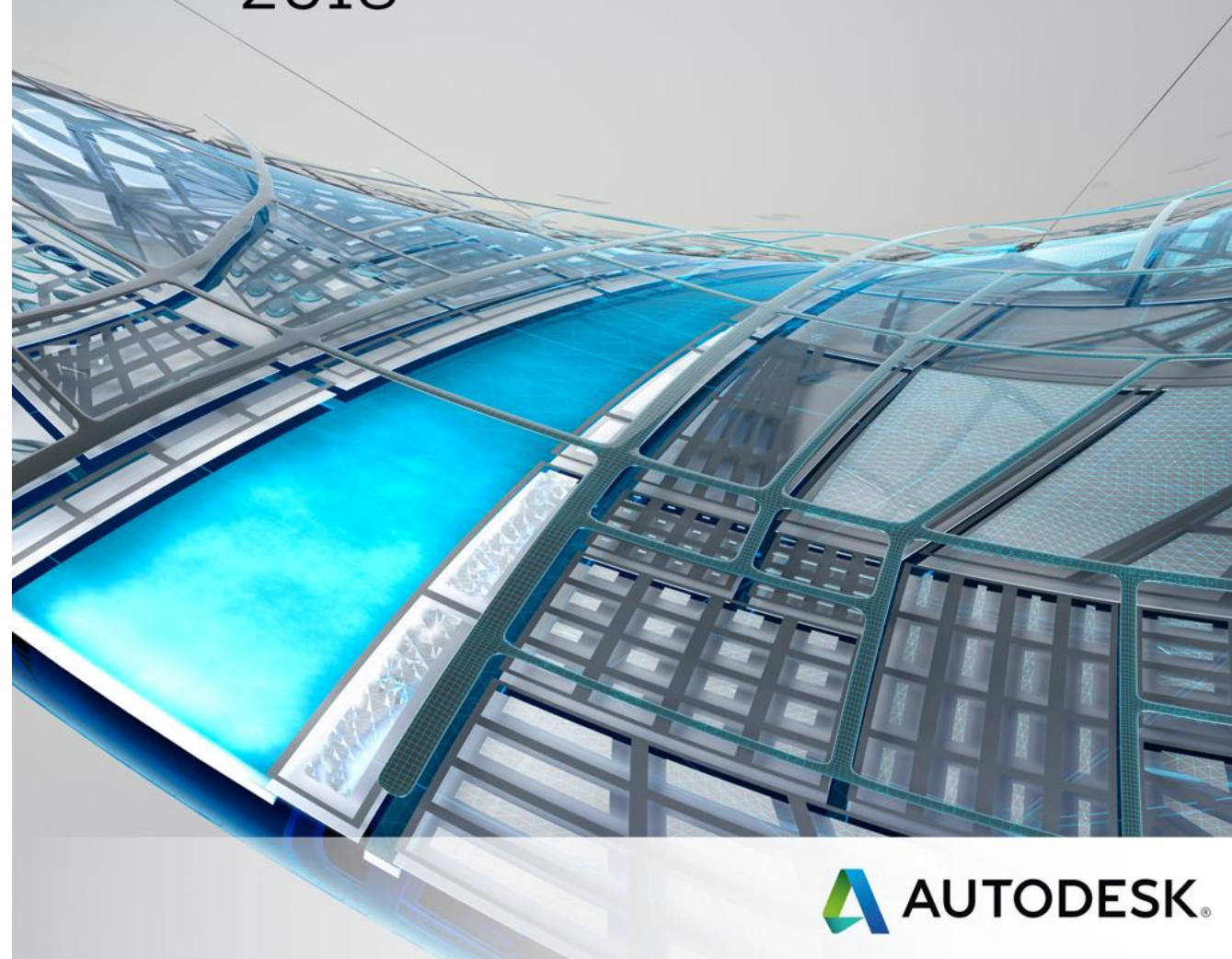
# And lack of version control





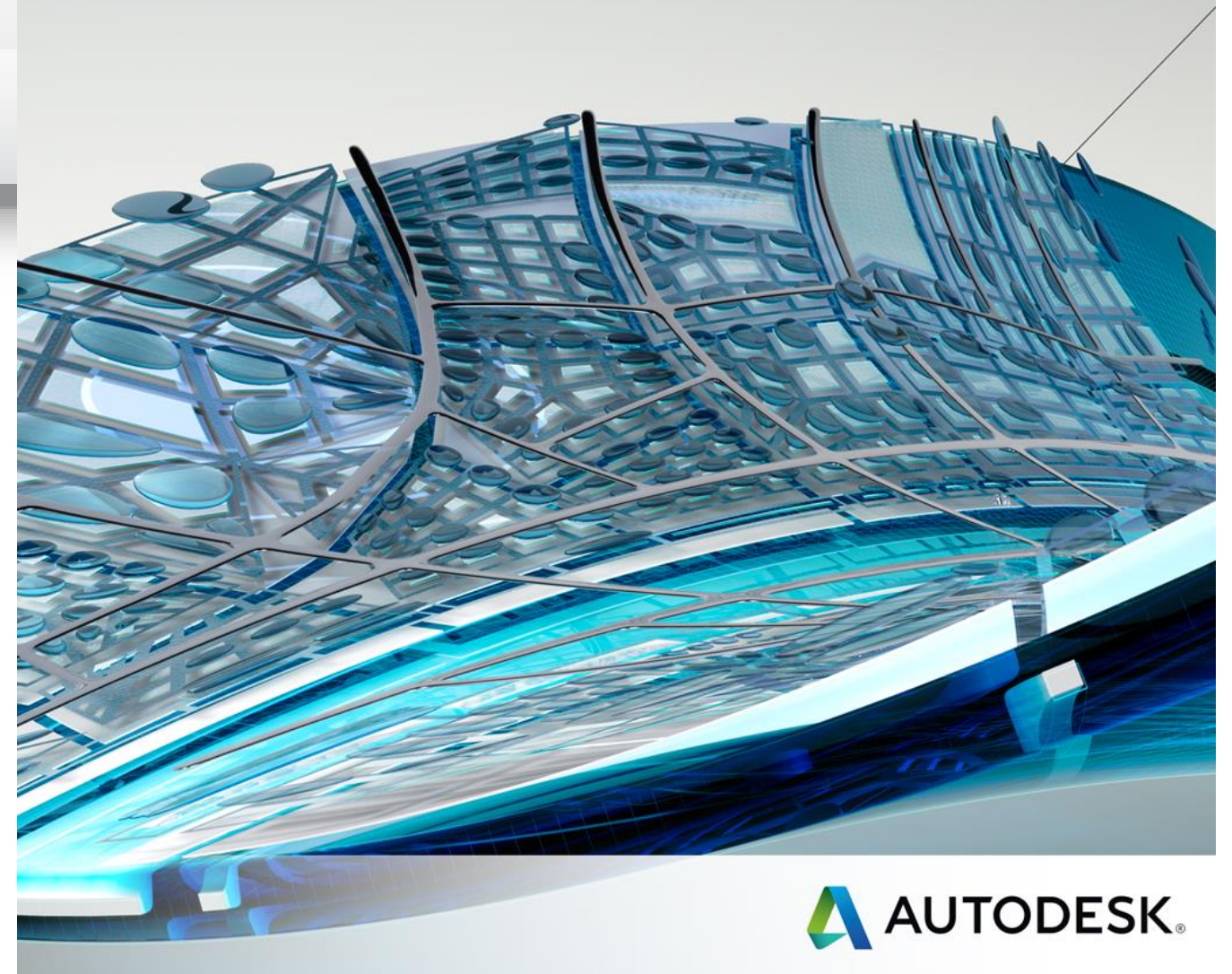
# B AUTODESK® BIM 360™

A AUTODESK®  
AUTOCAD® CIVIL 3D®  
2018



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I AUTODESK®  
INFRAWORKS®



AUTODESK®

# Autodesk BIM 360 Team or Docs ?

- BIM 360 Team

- Project management
  - View, Share, Review Drawings and Models
  - Markups and Redlines
  - Capture Feedback
  - Project Calendar
  - Access Anytime, Anywhere

- BIM 360 Docs

- Document management
  - View, Share, Review Drawings and Models
  - Markups and Redlines
  - Manage Issues/RFI
  - Manage Contractual Documents
  - Maintain Document Control
  - Access Anytime, Anywhere



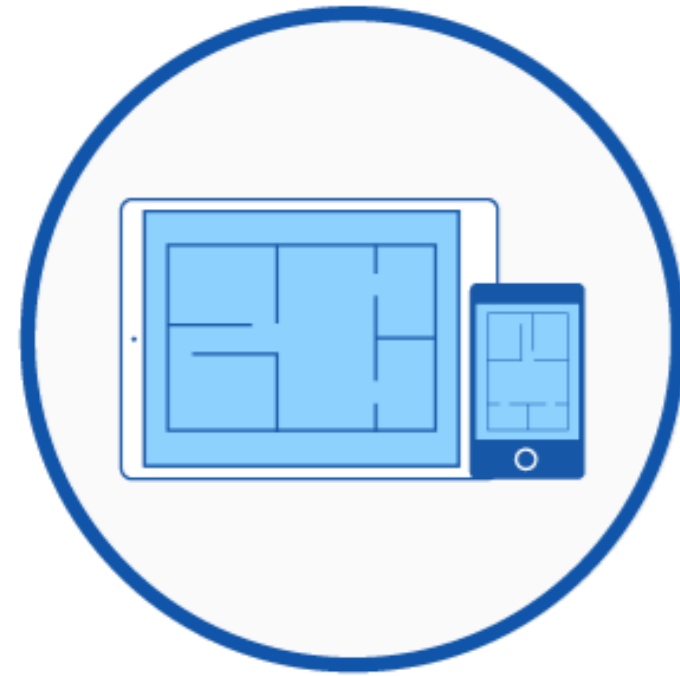
# Autodesk BIM 360 Docs



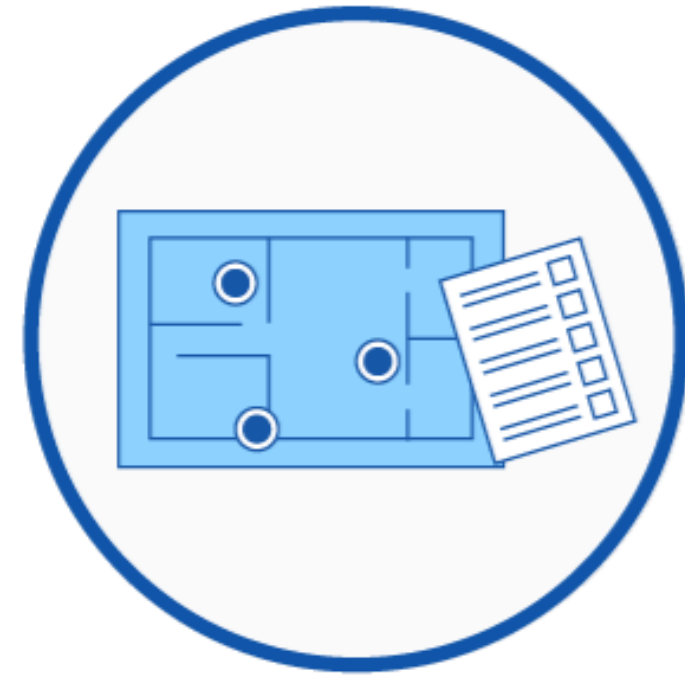
PUBLISH



SHARE



VIEW



MARKUP



One interface supporting all workflows.



Invite project members.

# Persona in the workflows



Designer



Project Manager



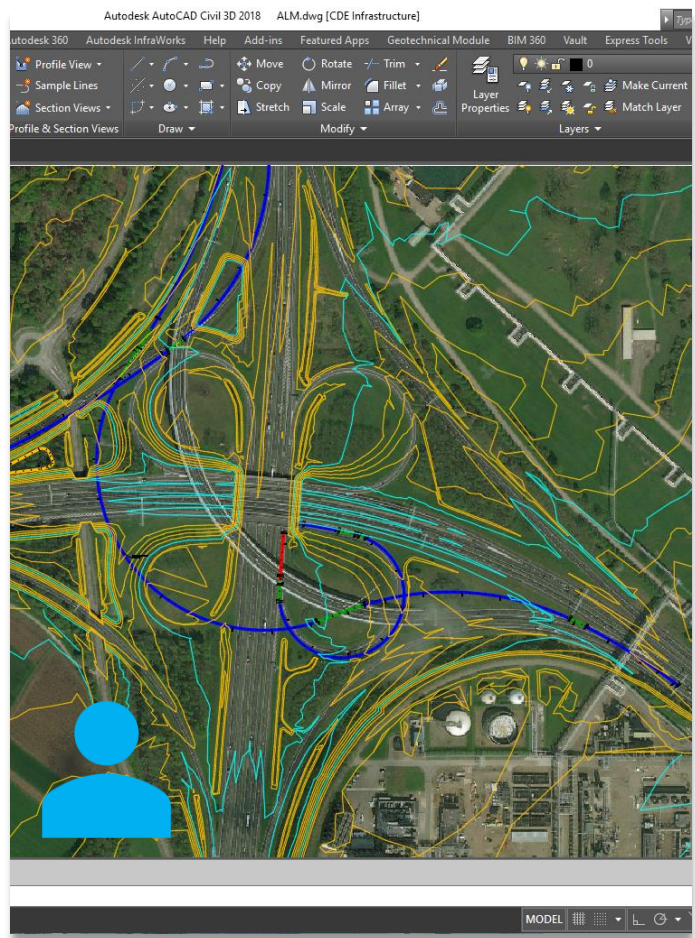
Client



Contractor

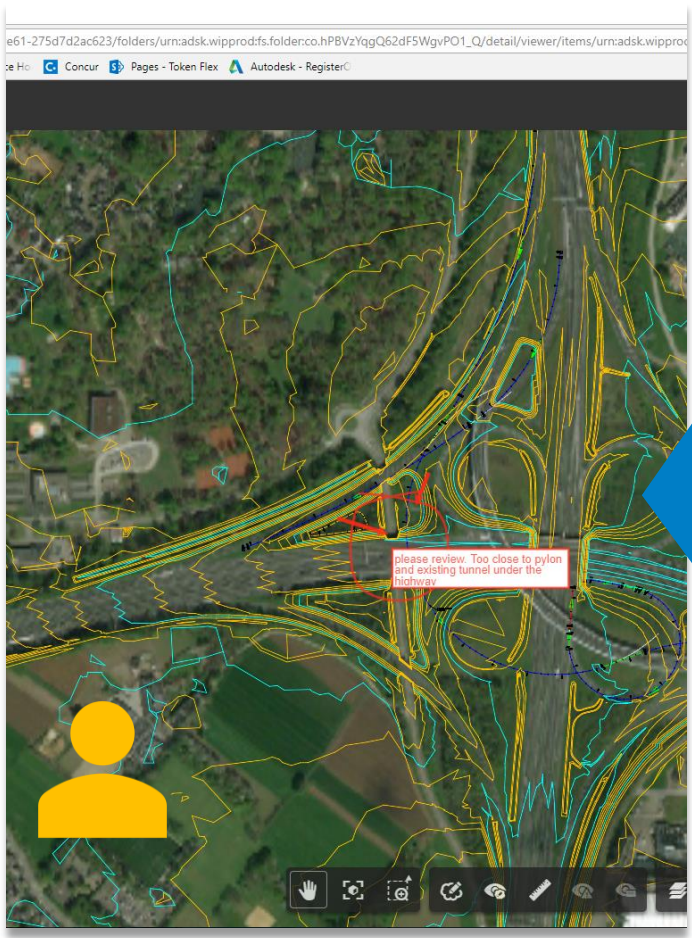
# Design Review - Internal

**AUTODESK®  
AUTOCAD® CIVIL 3D®**



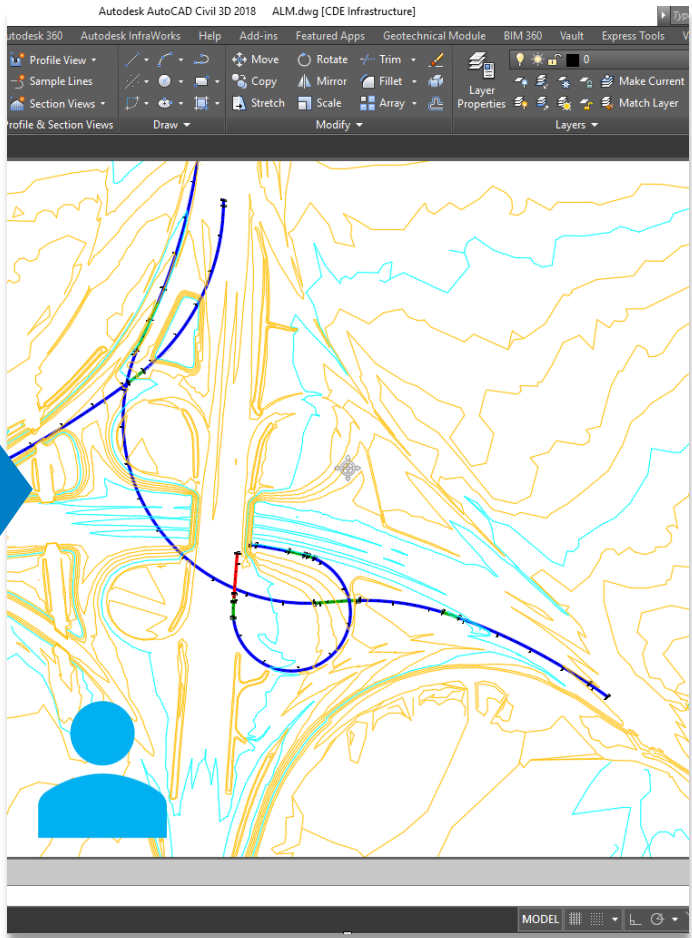
Design

**AUTODESK®  
BIM 360™**



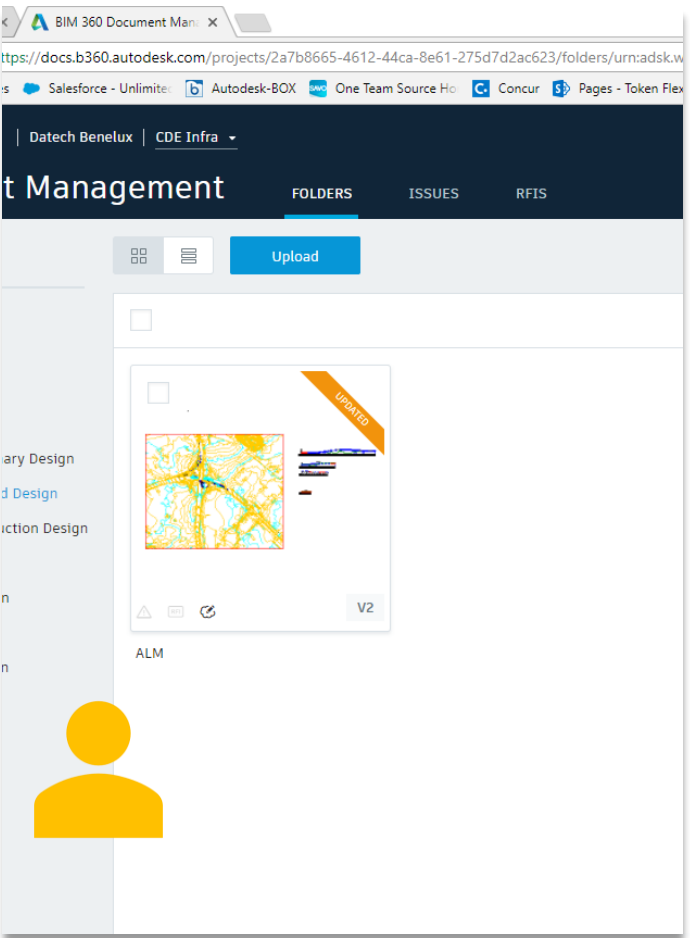
Design Review & Markups

**AUTODESK®  
AUTOCAD® CIVIL 3D®**



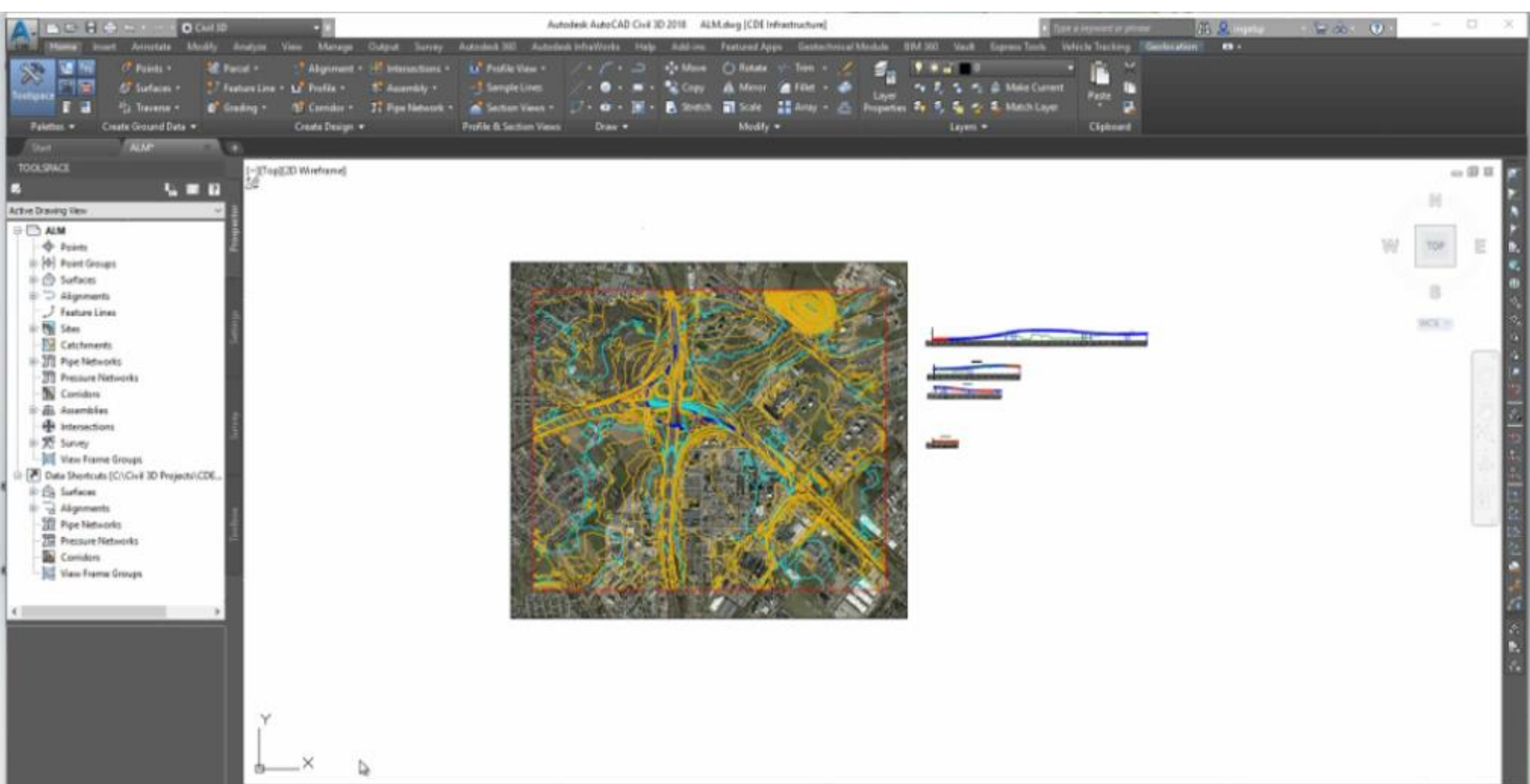
Design Modification

**AUTODESK®  
BIM 360™**



Approved





00:00,00





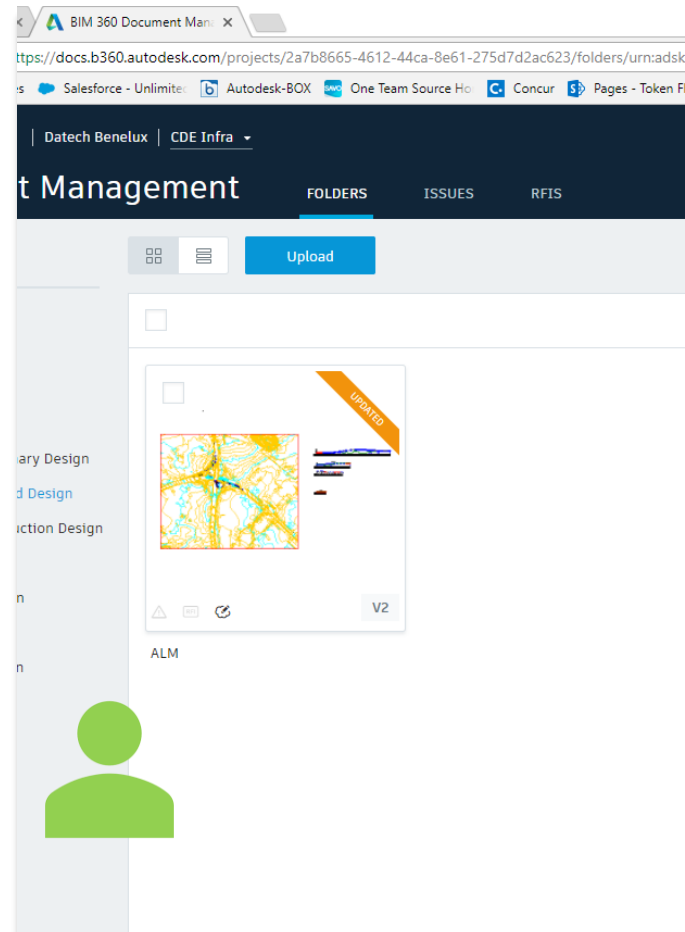
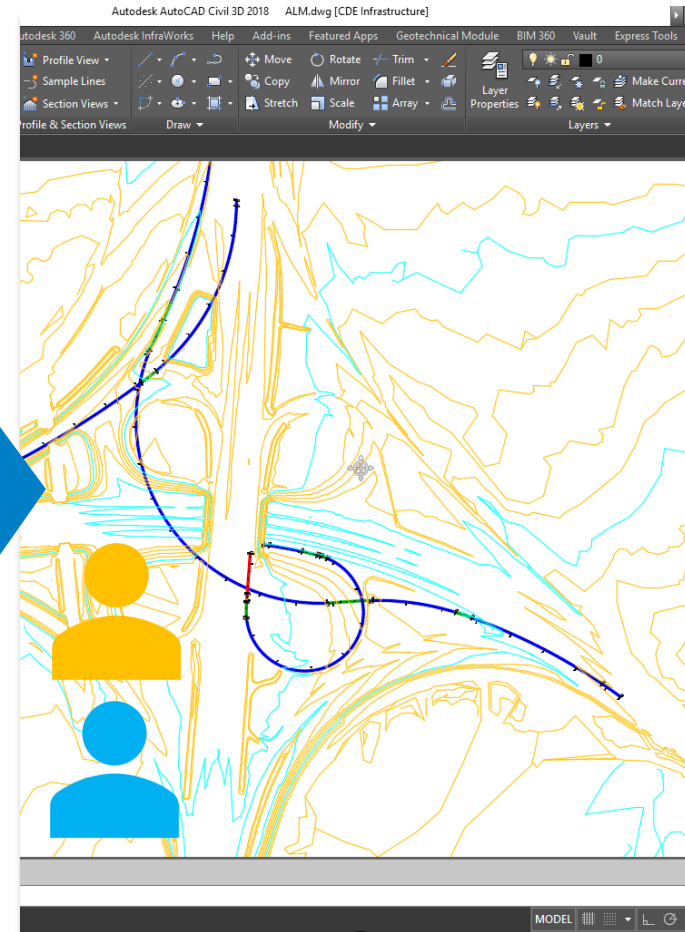
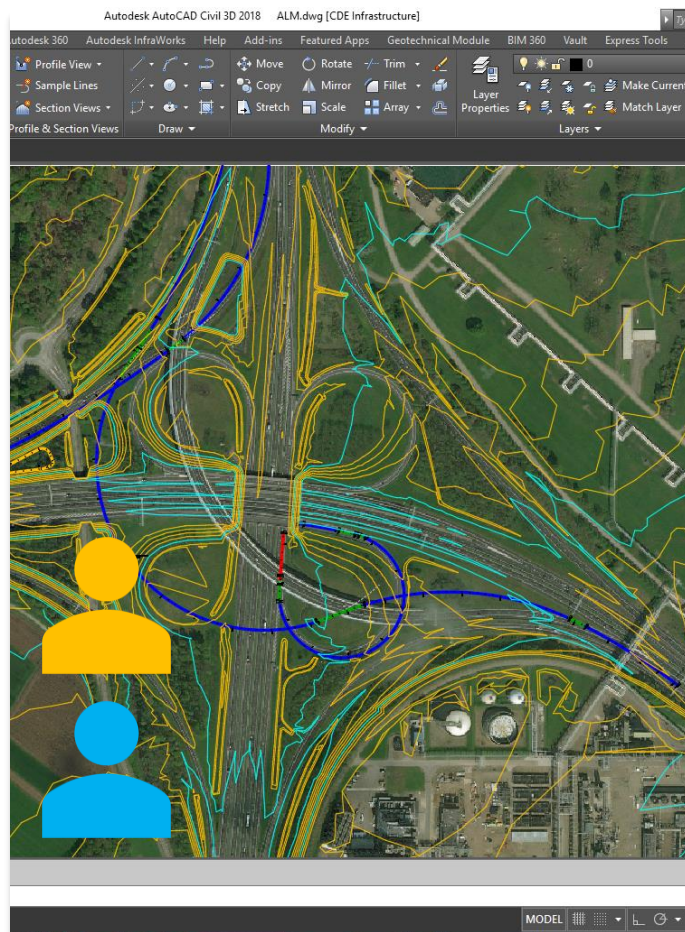
# Design Review – External (Contractual Documents)

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BIM 360™**

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BIM 360™**

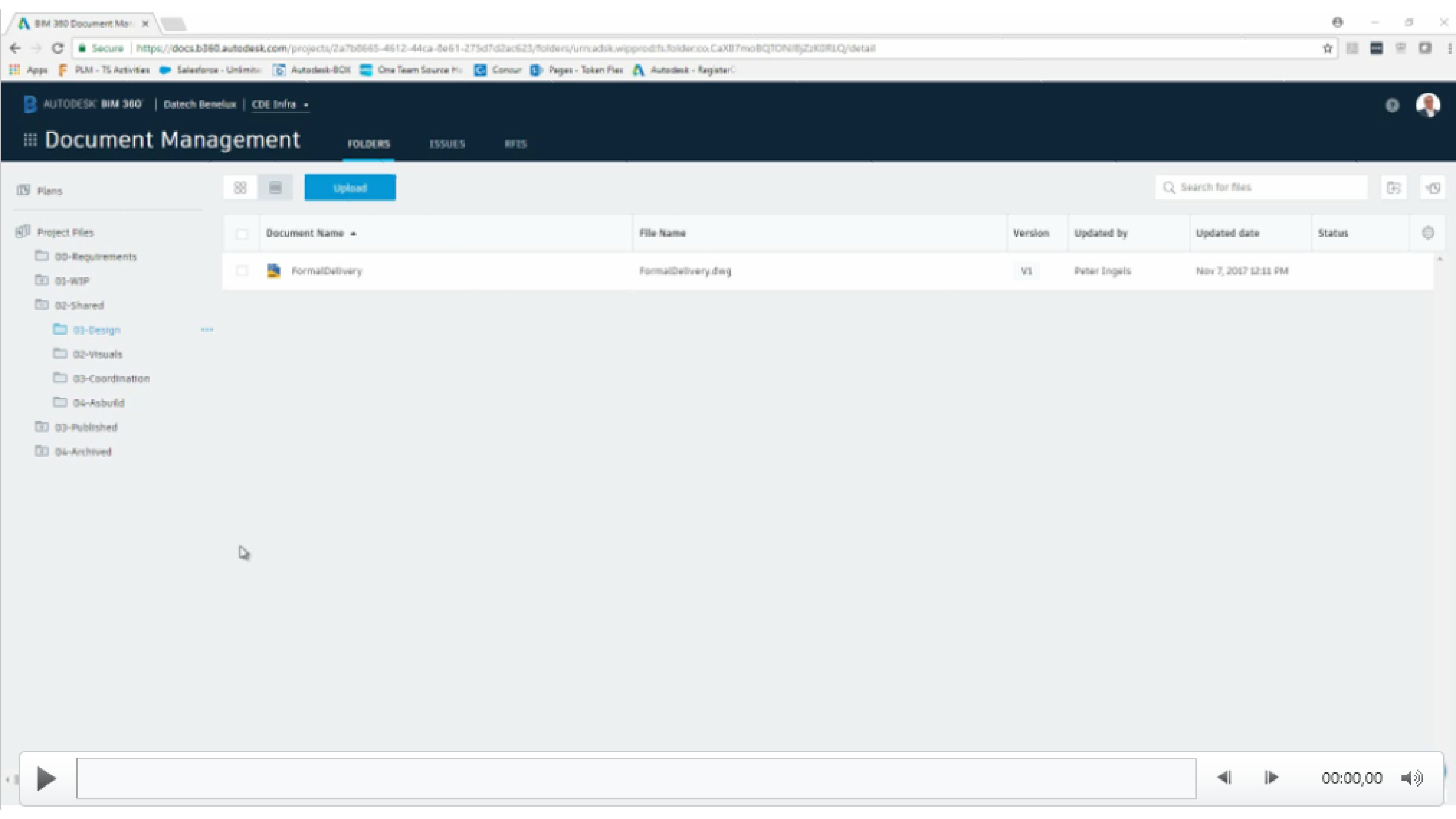


Design Documentation  
(Formal Delivery)

Design Review & Issues

Delivery Updates

Version Compare



# Title block extraction

AUTODESK® BIM 360™ Docs Medical Center [Exit Administration](#)

**Title blocks**

☒ Select 1

☒ FOOTING PLAN

Project Number	056750
Date	April 01, 2013
Drawn By	Author
Checked By	Checker
S101	
Scale	3/16" = 1'-0"
Standard	
24x36	
John Janzen. Sep 29, 2015 10:29:41 AM	

Add Title Block

Name

Full Size

Actions

+ Add Field

Sheet Number

S104

Sheet Name

ATRIUM FRAMING - SCHE

Drawn By

Author

Checked By

Checker

Autodesk  
Revit 2014 Dataset  
Model

ATRIUM FRAMING  
- SCHEDULES

Project Number	056750
Date	April 01, 2013
Drawn By	Author
Checked By	Checker
S104	
Scale	3/16" = 1'-0"

Cancel

Save

- Verify & modify data prior to publishing

# Issue Management (2D/3D)

The screenshot displays the Autodesk BIM 360 Document Management web interface. The browser address bar shows the URL: <https://docs.b360.autodesk.com/projects/2a7b8665-4612-44ca-8a61-275d7d2ac623/folders/vrmadsk.wipprod/folders/SrEJMBm2SpCdvZoGXDNuRA/detail>. The interface includes a top navigation bar with 'Document Management', 'FOLDERS', 'ISSUES', and 'RFIS'. A left sidebar shows a project hierarchy under 'Plans', including folders like '00-Requirements', '01-WTP', '02-Design', '02-Visuals', '03-Coordination', '04-AsBuild', '02-Shared', '03-Published', and '04-Archived'. The main content area features a table of documents, each with a checkbox, a document icon, a title, a file name, version, update details, and a title column. An 'Upload' button and a search bar are located at the top of the document list.

<input type="checkbox"/>	Document Name	File Name	Version	Updated by	Updated date	Number	Title
<input type="checkbox"/>	FormalDelivery - 2D View	FormalDelivery.dwg	V1	Peter Engels	Nov 7, 2017 12:15 PM		
<input type="checkbox"/>	FormalDelivery - 3D View	FormalDelivery.dwg	V1	Peter Engels	Nov 7, 2017 12:15 PM		
<input type="checkbox"/>	FormalDelivery - Section Sheet - (1)	FormalDelivery.dwg	V1	Peter Engels	Nov 7, 2017 12:15 PM		
<input type="checkbox"/>	FormalDelivery - Section Sheet - (2)	FormalDelivery.dwg	V1	Peter Engels	Nov 7, 2017 12:15 PM		
<input type="checkbox"/>	FormalDelivery - Section Sheet - (3)	FormalDelivery.dwg	V1	Peter Engels	Nov 7, 2017 12:15 PM		

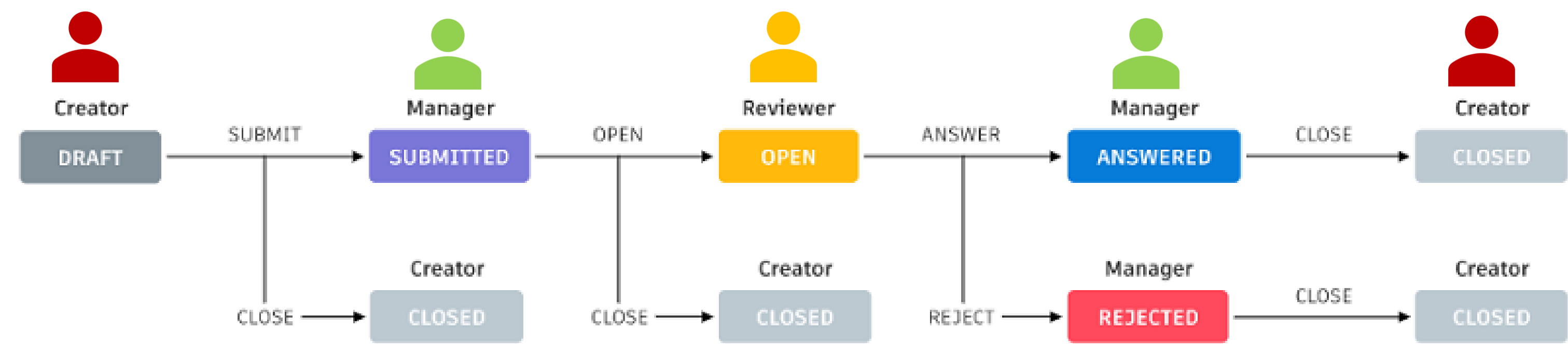


# Version Compare

The screenshot displays the Autodesk BIM 360 Document Management web application. The interface includes a top navigation bar with the Autodesk logo and user information. Below this is a 'Document Management' header with tabs for 'FOLDERS', 'ISSUES', and 'RTS'. A left sidebar shows a hierarchical tree of project folders, including '00-Requirements', '01-WIP', '01-Design', '02-Visuals', '03-Coordination', '04-AsBuilt', and '05-Presentation'. The main content area features a search bar and a table of documents. The table has columns for 'Document Name', 'File Name', 'Version', 'Updated by', 'Updated date', 'Number', and 'Title'. Five documents are listed, all named 'FormalDelivery.dwg' and updated by 'Peter Engels' on 'Nov 2, 2017 1:45 PM'. The documents are categorized by their 'Document Name' column, which includes 'FormalDelivery - 2D View', 'FormalDelivery - 3D View', and 'FormalDelivery - Section Sheet - (1)', '(2)', and '(3)'. An 'Upload' button is visible at the top of the document list.

Document Name	File Name	Version	Updated by	Updated date	Number	Title
FormalDelivery - 2D View	FormalDelivery.dwg	V2	Peter Engels	Nov 2, 2017 1:45 PM		
FormalDelivery - 3D View	FormalDelivery.dwg	V2	Peter Engels	Nov 2, 2017 1:45 PM		
FormalDelivery - Section Sheet - (1)	FormalDelivery.dwg	V2	Peter Engels	Nov 2, 2017 1:45 PM		
FormalDelivery - Section Sheet - (2)	FormalDelivery.dwg	V2	Peter Engels	Nov 2, 2017 1:45 PM		
FormalDelivery - Section Sheet - (3)	FormalDelivery.dwg	V2	Peter Engels	Nov 2, 2017 1:45 PM		

# RFI Management (2D/3D)



RFI Workflow

[Change Workflow](#)

Workflow Name

Description

RFI Workflow **DEFAULT**

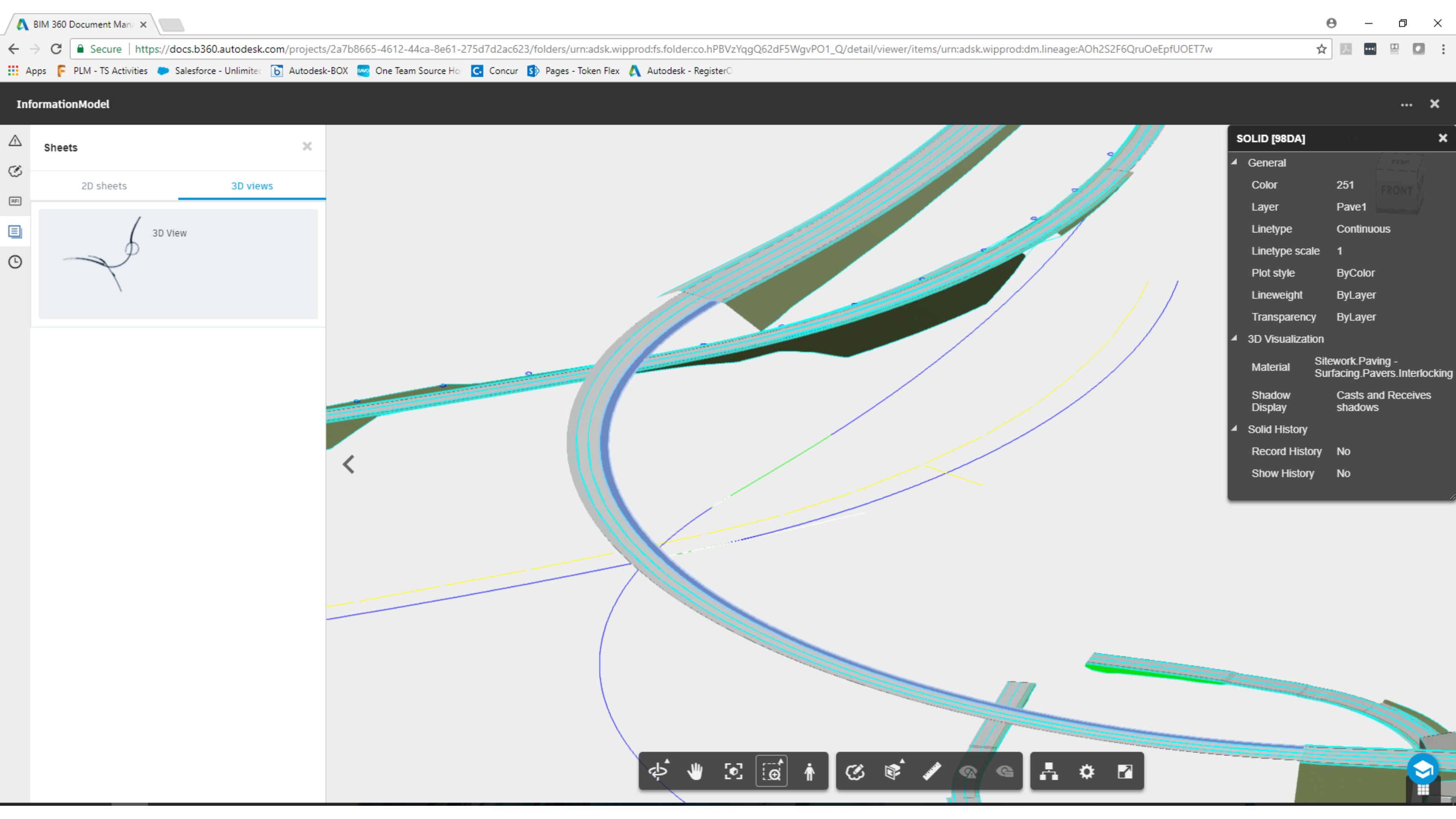
Support for RFI creation, review and response with Creator, Manager and Reviewer workflow roles. Reviewer may include trade engineers via mention and may gather feedback via comments.  
[View extended workflow](#)



Workflow Role

User/Role/Company

Creator	All Users , Johan Cantryn , Peter Ingels
Manager	Contractor
Reviewer	Designer



## InformationModel

### Sheets

2D sheets

3D views

3D View

### SOLID [98DA]

#### General

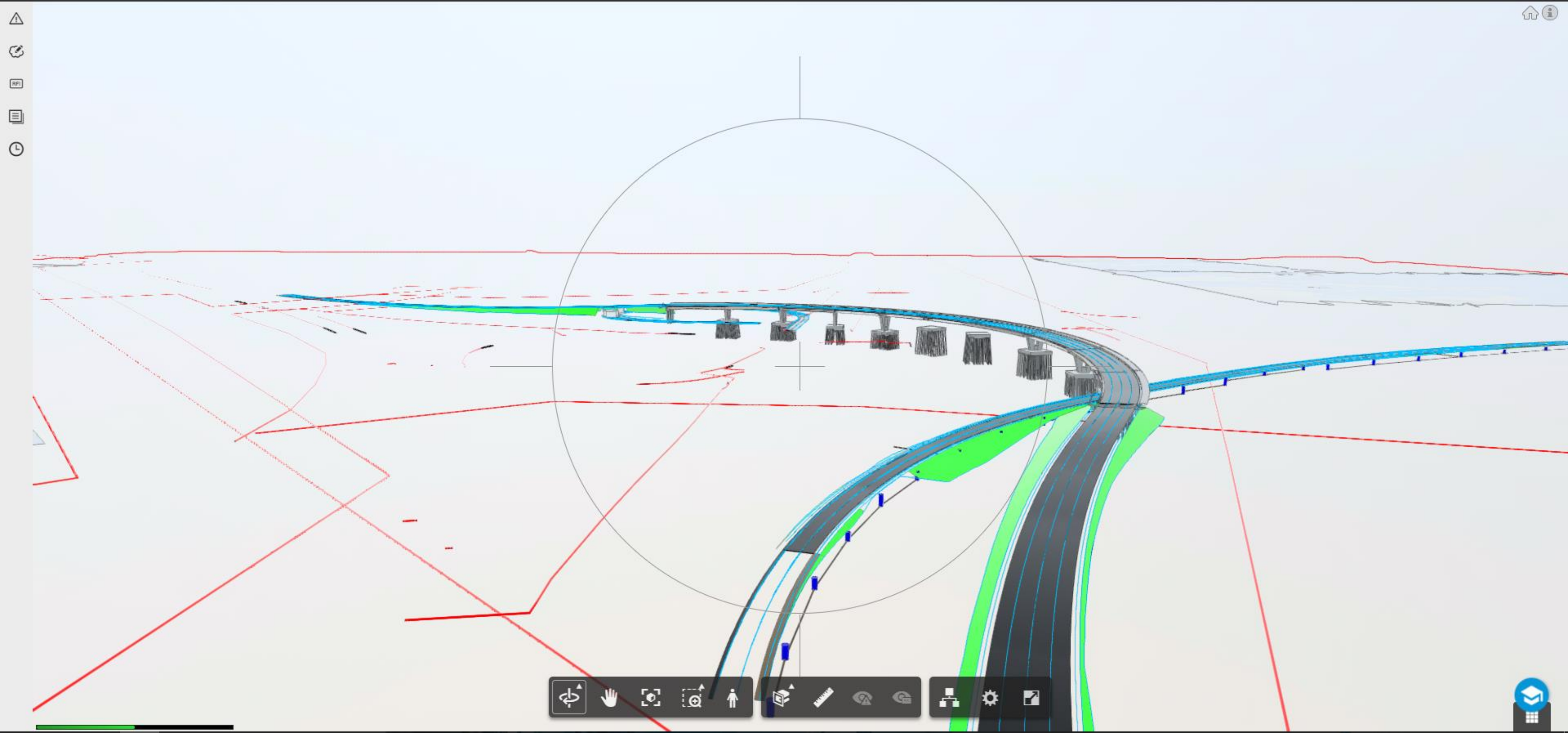
Color	251
Layer	Pave1
Linetype	Continuous
Linetype scale	1
Plot style	ByColor
Lineweight	ByLayer
Transparency	ByLayer

#### 3D Visualization

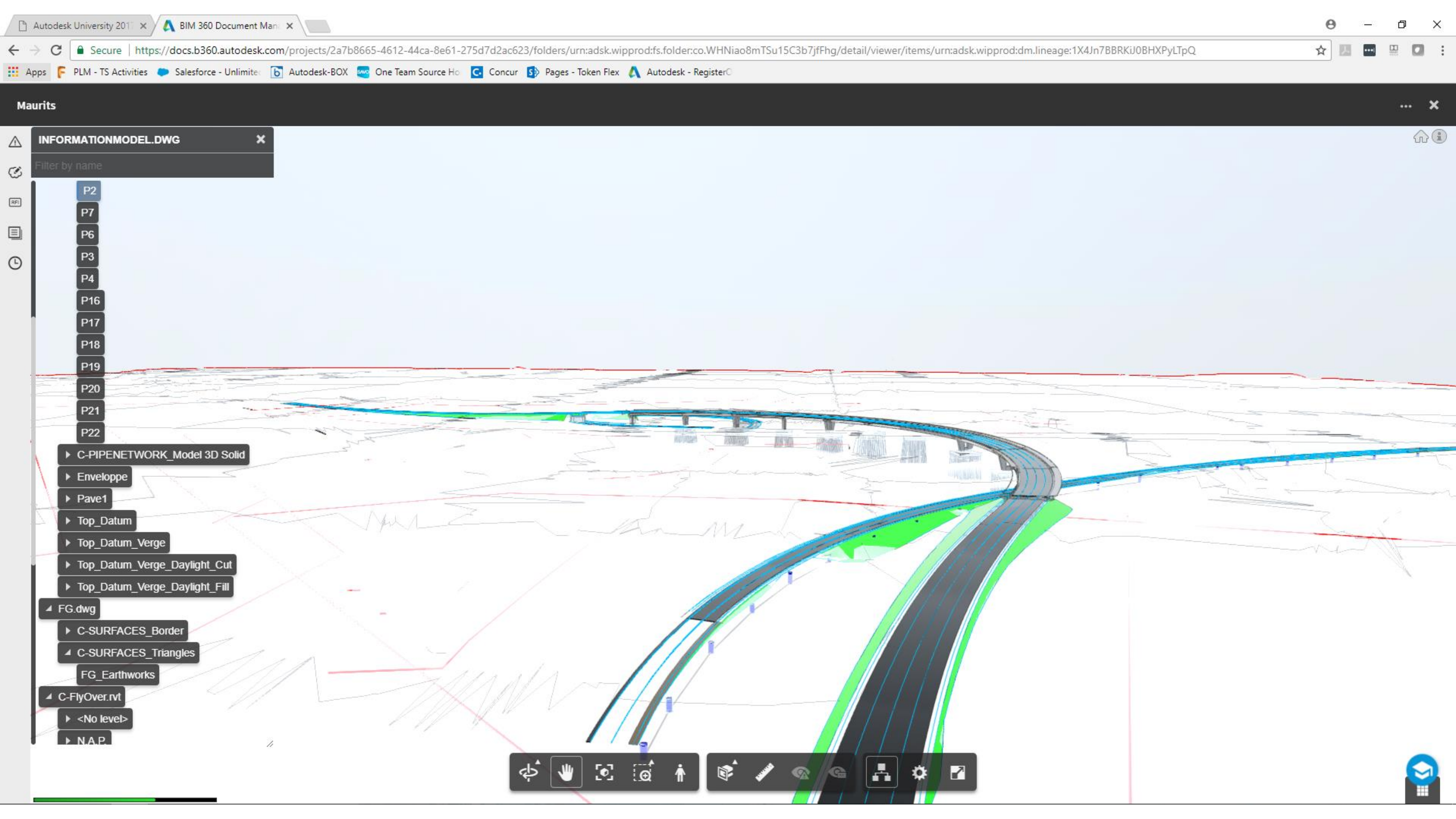
Material	Sitework.Paving - Surfacing.Pavers.Interlocking
Shadow Display	Casts and Receives shadows

#### Solid History

Record History	No
Show History	No







Maurits

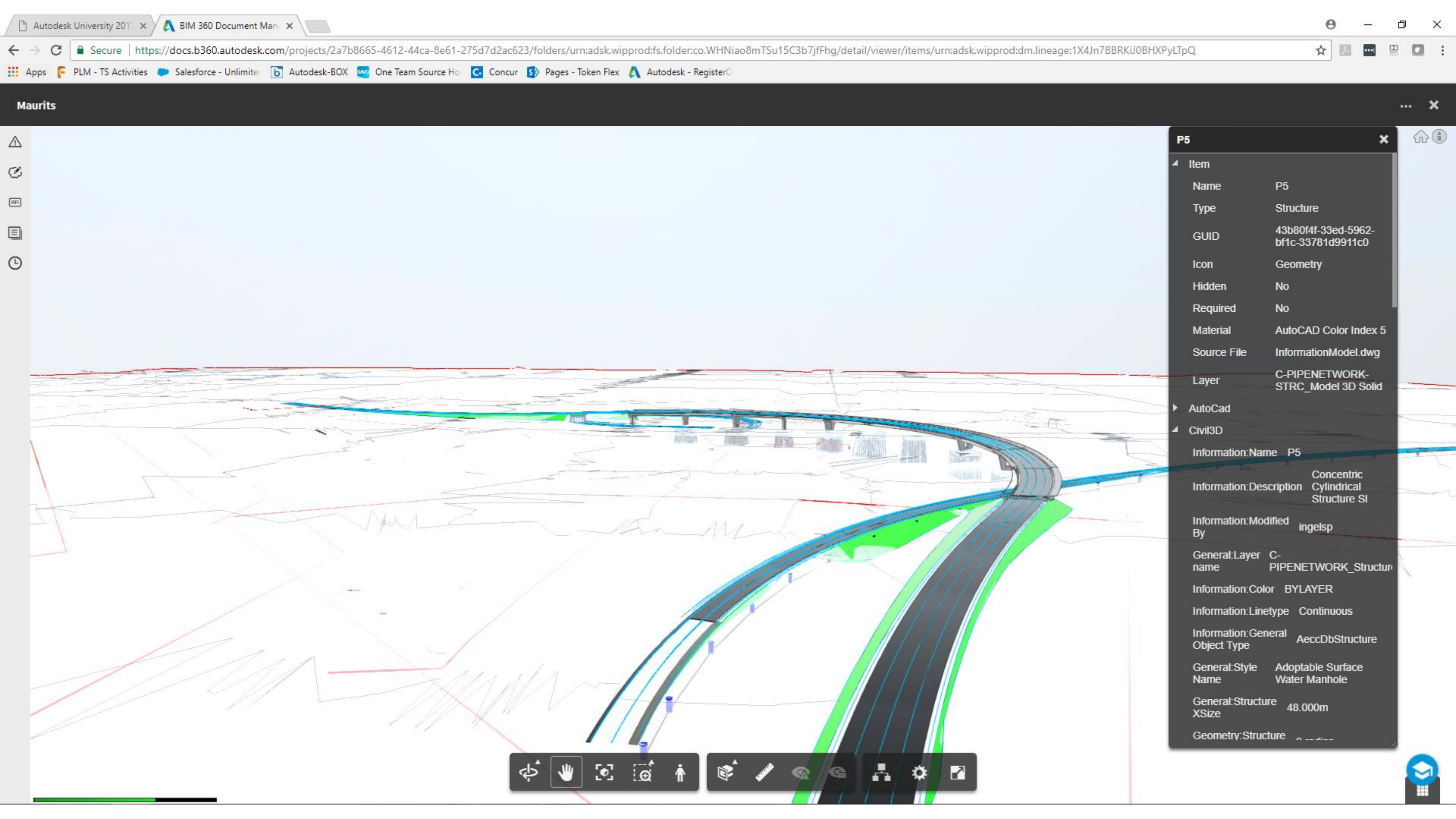
INFORMATIONMODEL.DWG

Filter by name

- P2
- P7
- P6
- P3
- P4
- P16
- P17
- P18
- P19
- P20
- P21
- P22
- C-PIPENETWORK\_Model 3D Solid
- Enveloppe
- Pave1
- Top\_Datum
- Top\_Datum\_Verge
- Top\_Datum\_Verge\_Daylight\_Cut
- Top\_Datum\_Verge\_Daylight\_Fill
- ▾ FG.dwg
  - C-SURFACES\_Border
  - ▾ C-SURFACES\_Triangles
    - FG\_Earthworks
- ▾ C-FlyOver.rvt
  - <No level>
  - N.A.P.



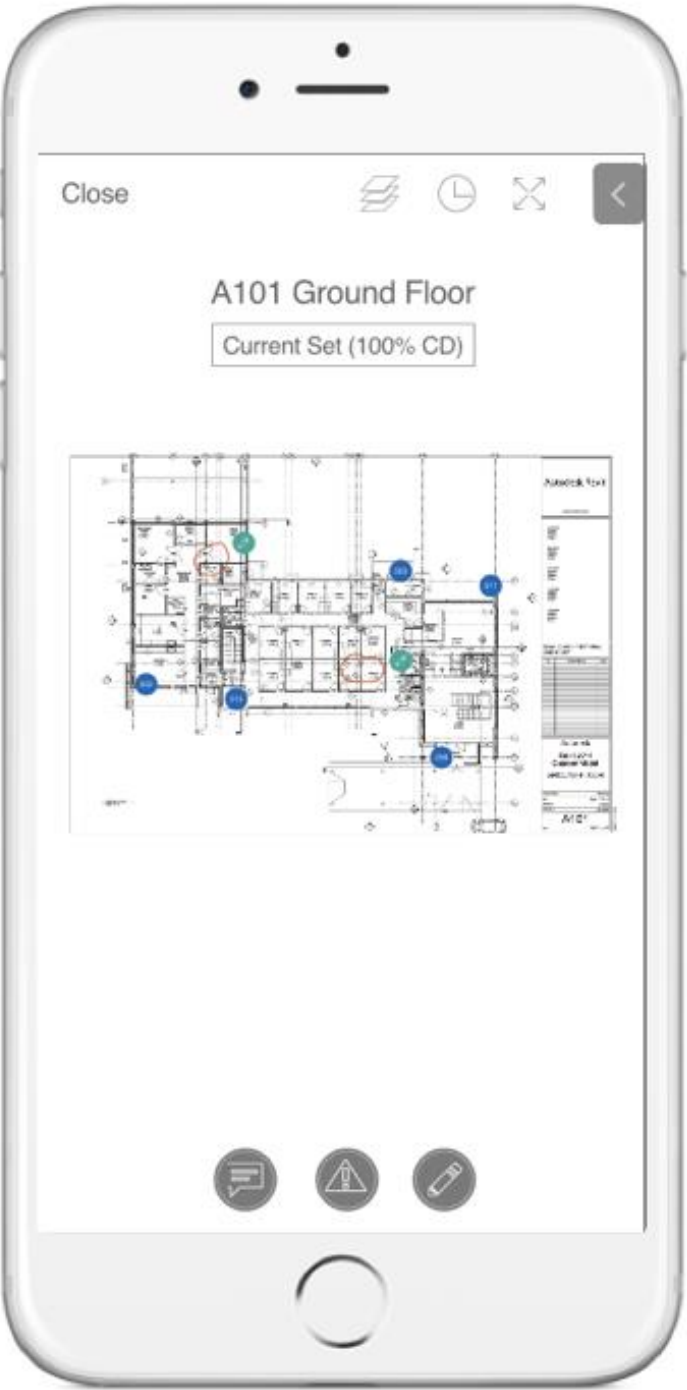
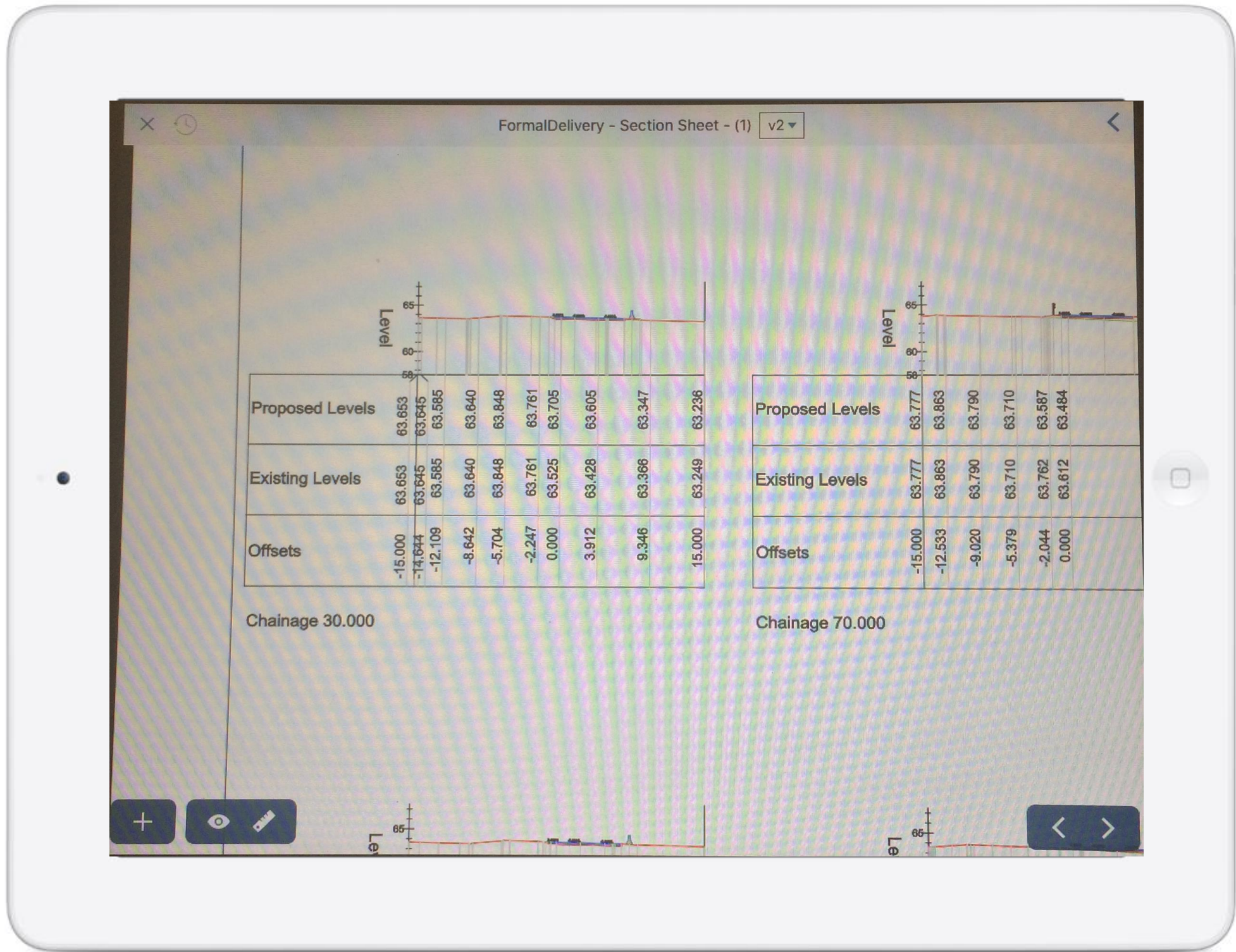




P5	
Item	
Name	P5
Type	Structure
GUID	43b80f4f-33ed-5962-bf1c-33781d9911c0
Icon	Geometry
Hidden	No
Required	No
Material	AutoCAD Color Index 5
Source File	InformationModel.dwg
Layer	C-PIPENETWORK-STRC_Model 3D Solid
AutoCad	
Civil3D	
Information:Name	P5
Information:Description	Concentric Cylindrical Structure SI
Information:Modified By	ingelsp
General:Layer name	C-PIPENETWORK_Structure
Information:Color	BYLAYER
Information:Linetype	Continuous
Information:General Object Type	AeccDbStructure
General:Style Name	Adoptable Surface Water Manhole
General:Structure XSize	48.000m
Geometry:Structure	

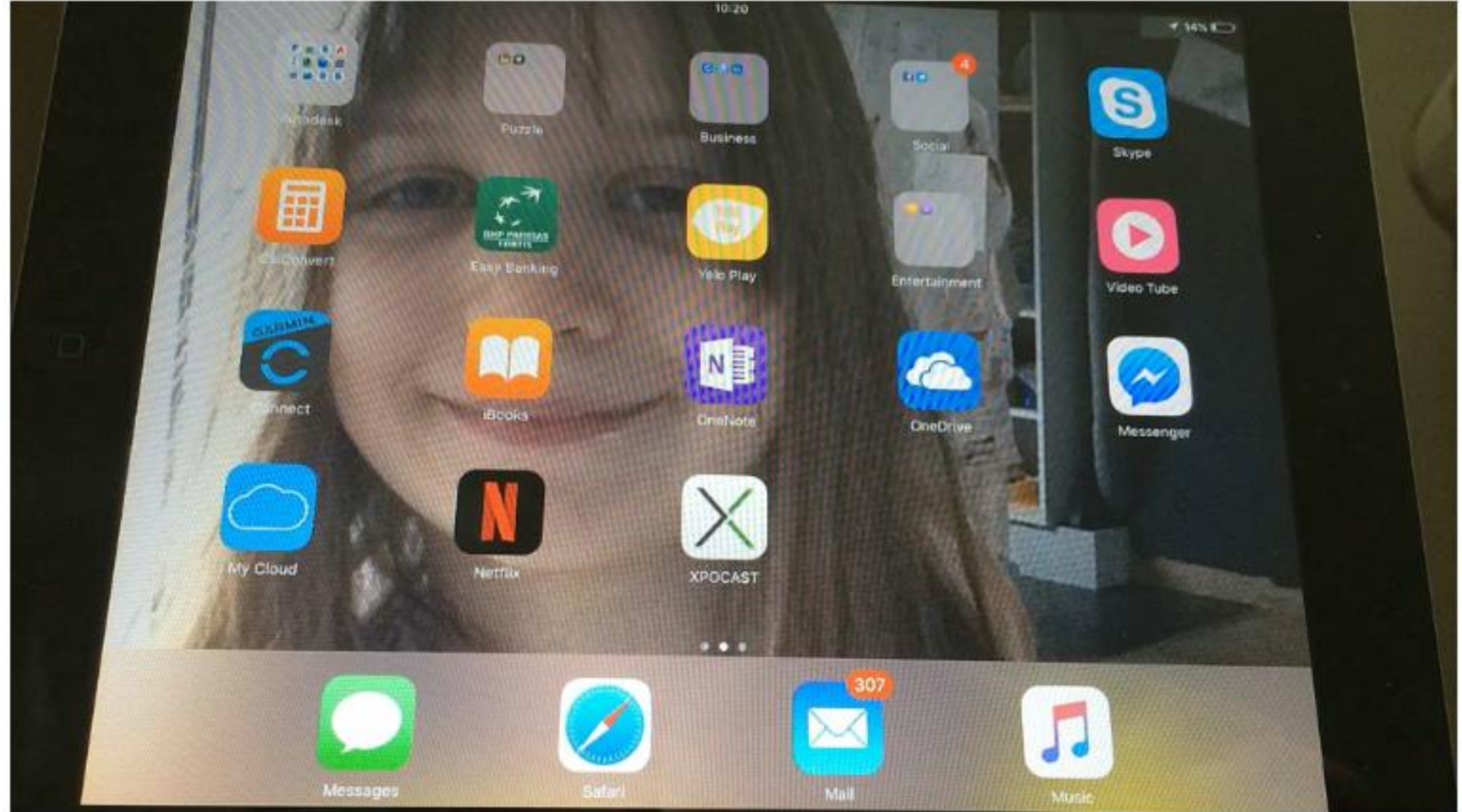


# Anytime/Anywhere Access





# Anytime/Anywhere Access



# Activity log

BIM 360 Document Man

Secure

https://docs.b360.autodesk.com/projects/2a7b8665-4612-44ca-8e61-275d7d2ac623/folders/urn:adsk.wipprod:fs.folder:co.SrEJM8m2SpCdvZoGXDYeRA/detail/publish\_center

Apps

PLM - TS Activities

Salesforce - Unlimitec

Autodesk-BOX

One Team Source Ho

Concur

Pages - Token Flex

Autodesk - RegisterO

AUTODESK BIM 360

Datech Benelux

CDE Infra

Document Management

FOLDERS

ISSUES

RFIS

?

Publish Log

Show Legacy Publish Log

Exit

File Name	Uploaded by	Uploaded to	Uploaded Date	Status	
FormalDelivery.dwg	Peter Ingels	Plans/01-WIP/01-Design/02-...	Nov 7, 2017 12:13 PM	Published	View • Show In Folder
FormalDelivery.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 7, 2017 12:06 PM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 7, 2017 11:28 AM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 7, 2017 11:18 AM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 7, 2017 11:08 AM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 7, 2017 10:55 AM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 6, 2017 4:31 PM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 6, 2017 4:25 PM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 6, 2017 4:14 PM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Nov 6, 2017 3:47 PM	Published	Show In Folder
07-Invite by role.camrec and 13 other files	Johan Cantryn	Project Files/01-WIP/05-Pres...	Oct 16, 2017 1:19 PM	Published	Show In Folder
RoadDesign.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Oct 9, 2017 12:16 PM	Published	Show In Folder
RoadDesign.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Oct 6, 2017 11:54 AM	Published	Show In Folder
RoadDesign.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Oct 6, 2017 11:47 AM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Oct 6, 2017 11:36 AM	Published	Show In Folder
ALM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Oct 6, 2017 11:27 AM	Published	Show In Folder
DTM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Oct 6, 2017 11:21 AM	Published	Show In Folder
DTM.dwg	Peter Ingels	Project Files/01-WIP/01-Desi...	Oct 6, 2017 11:20 AM	Published	Show In Folder



