Get Pumped Up - Pressure Pipe System Curves, Power Loads and P&ID Validation!

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Principal Designer

HAZEN AND SAWYER
Environmental Engineers & Scientists

House Keeping

- Turn Cell Phones Off or put them on Vibrate
- Fill Out the Questionnaire
- Please save questions at the end

Speaker's Background

- Started getting into 3D BIM - 1989
  - Mechanical Design – Tool and Die, Machine Design
  - Web Industry – Holographic Visa and MasterCard
  - Petroleum and Chemical Plants
  - **AEC** - **A**rchitecture **E**ngineering **C**onstruction

Key learning objectives – Take-A-Ways!!!

At the end of this class, you will be able to:

1) **Creating a model driven hydraulic system curve**

2) **Develop ways to make determining the Power requirements of the system to be model driven**

3) **Validating the Revit Model using a Revit P&ID**

4) **Understand different ways to improve workflows, by looking at how information is disseminated throughout the team.**

Key learning objective

1) Creating a model driven hydraulic system curve

Friction Head

Static Head

Connection Configuration Settings

- Present / Calculated Method
  - Present = Use this Number
  - Calculated = Give Me the Number

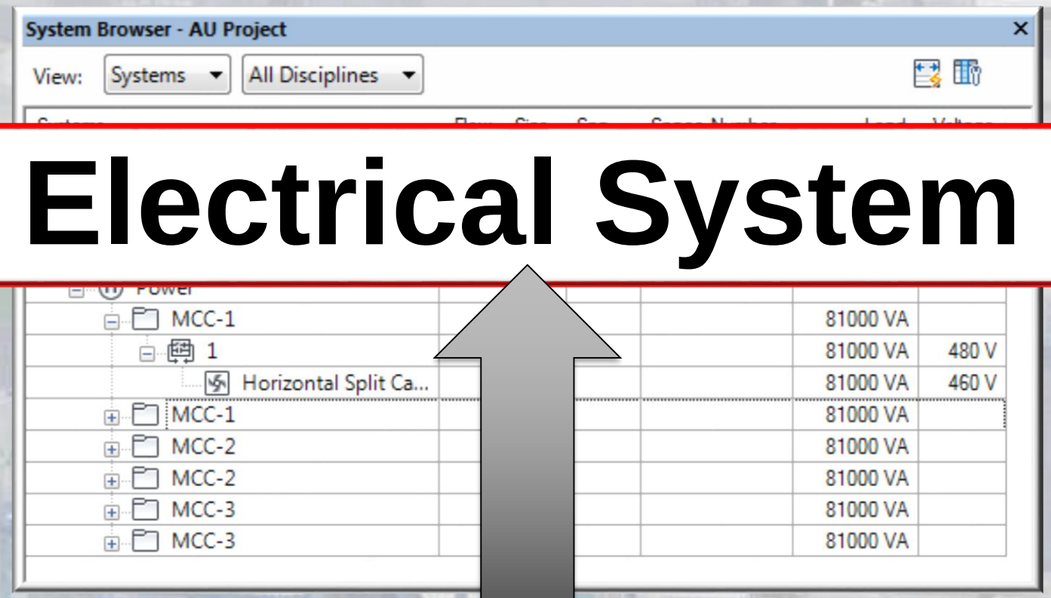
Friction Head

Static Head

Key learning objective

2) Develop ways to make determining the Power requirements of the system to be model driven.

Model Driven Power Requirements



Electrical System

<Electrical Circuit Schedule>

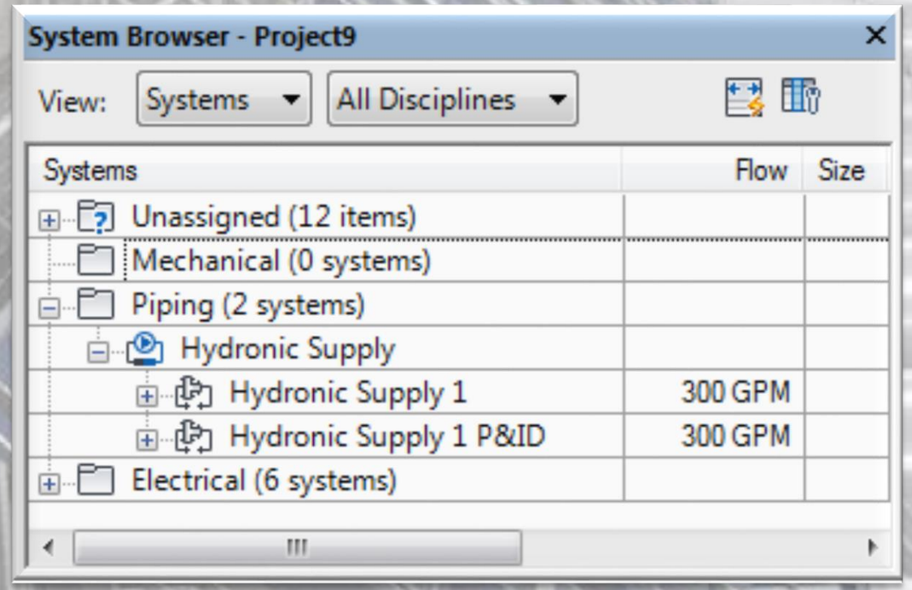
A	B	C	D	E	F	G	H	I
Panel	System Type	Apparent Load	Load Name	Apparent Load Phase A	Voltage	Apparent Load Units Conversion	HP Factor	Horse Power
MCC-1	Power	81000 VA	P&ID	27000 VA	480 V	81000	0.00134	108.54
MCC-1	Power	81000 VA	Appliance - Dwelling Unit	27000 VA	480 V	81000	0.00134	108.54
MCC-2	Power	81000 VA	P&ID	27000 VA	480 V	81000	0.00134	108.54
MCC-2	Power	81000 VA	Appliance - Dwelling Unit	27000 VA	480 V	81000	0.00134	108.54
MCC-3	Power	81000 VA	P&ID	27000 VA	480 V	81000	0.00134	108.54
MCC-3	Power	81000 VA	Appliance - Dwelling Unit	27000 VA	480 V	81000	0.00134	108.54

Key learning objective

3) Validating the Revit Model using a Revit P&ID

P&ID Validation

Valid Systems



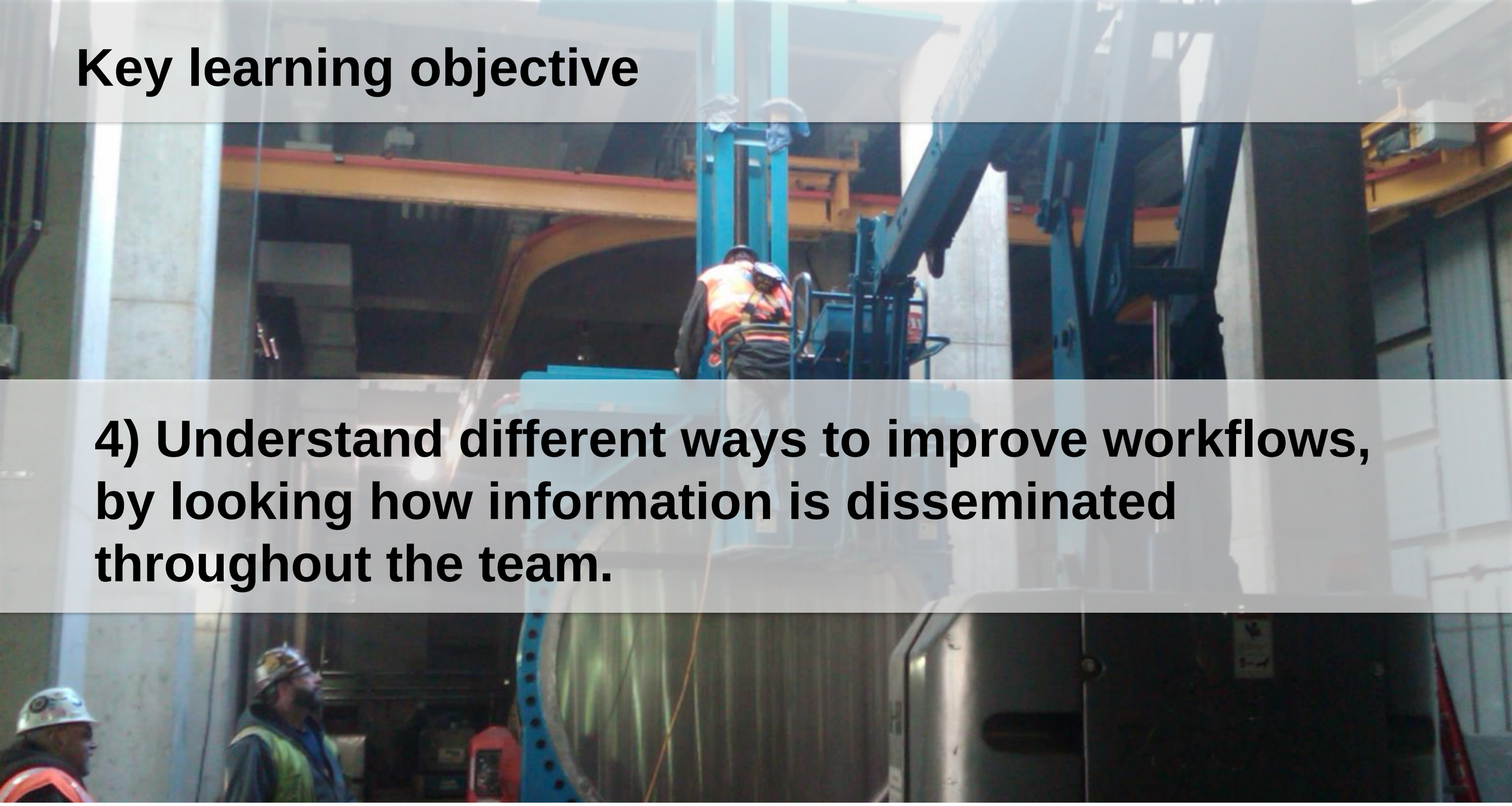
<Mechanical Equipment Schedule>

A	B	C
Mark	Family and Type	System Name
DT-1	Expansion Tank - for Discharge Line: 275 Gallon	Hydronic Supply 1 P&ID
DT-1	Expansion Tank - for Discharge Line: 275 Gallon	Hydronic Supply 1
P-1	Horizontal Split Case P	
P-1	Horizontal Split Case P	
P-2	Horizontal Split Case P	
P-2	Horizontal Split Case P	
P-3	Horizontal Split Case P	
P-3	Horizontal Split Case P	
ST-1	Expansion Tank - for S	
ST-1	Expansion Tank - for S	

<Valve Schedule>

A	B	C
Mark	Family and Type	System Name
CV-1	Check Valve - 2-12 Inch - Flanged: 8	Hydronic Supply 1 P&ID
CV-1	Check Valve - 2-12 Inch - Flanged: 8	Hydronic Supply 1
CV-2	Check Valve - 2-12 Inch - Flanged: 8	Hydronic Supply 1 P&ID
CV-2	Check Valve - 2-12 Inch - Flanged: 8	Hydronic Supply 1
CV-3	Check Valve - 2-12 Inch - Flanged: 8	Hydronic Supply 1 P&ID
CV-3	Check Valve - 2-12 Inch - Flanged: 8	Hydronic Supply 1
GV-1.1	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1 P&ID
GV-1.1	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1
GV-1.2	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1 P&ID
GV-1.2	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1
GV-2.1	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1 P&ID
GV-2.1	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1
GV-2.2	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1 P&ID
GV-2.2	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1
GV-3.1	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1 P&ID
GV-3.1	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1
GV-3.2	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1 P&ID
GV-3.2	Gate Valve - 2-12 Inch: 8"	Hydronic Supply 1
GV-DT.1	Gate Valve - 2-12 Inch: 4"	Hydronic Supply 1 P&ID
GV-DT.1	Gate Valve - 2-12 Inch: 4"	Hydronic Supply 1
GV-ST.1	Gate Valve - 2-12 Inch: 4"	Hydronic Supply 1 P&ID
GV-ST.1	Gate Valve - 2-12 Inch: 4"	Hydronic Supply 1

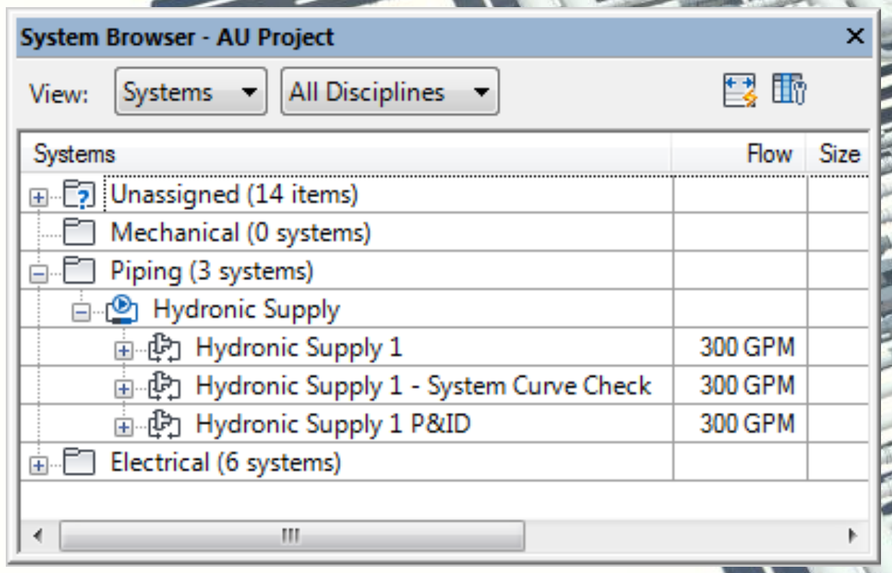
Key learning objective



4) Understand different ways to improve workflows, by looking how information is disseminated throughout the team.

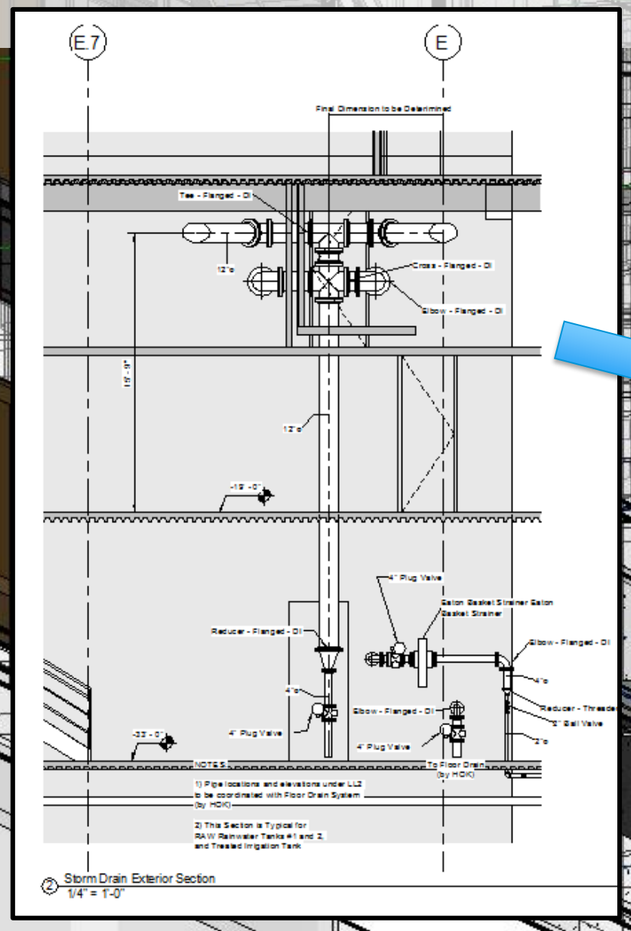
Revit Model

P&ID, Design, Analyses

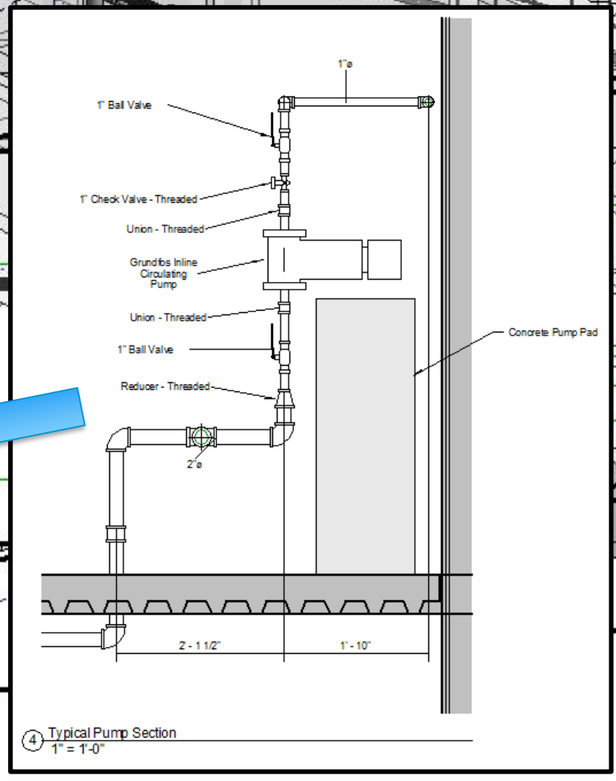


Adapts to your Workflow

Example… Putting a function to use…



2 Storm Drain Exterior Section
1/4" = 1'-0"



4 Typical Pump Section
1" = 1'-0"

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