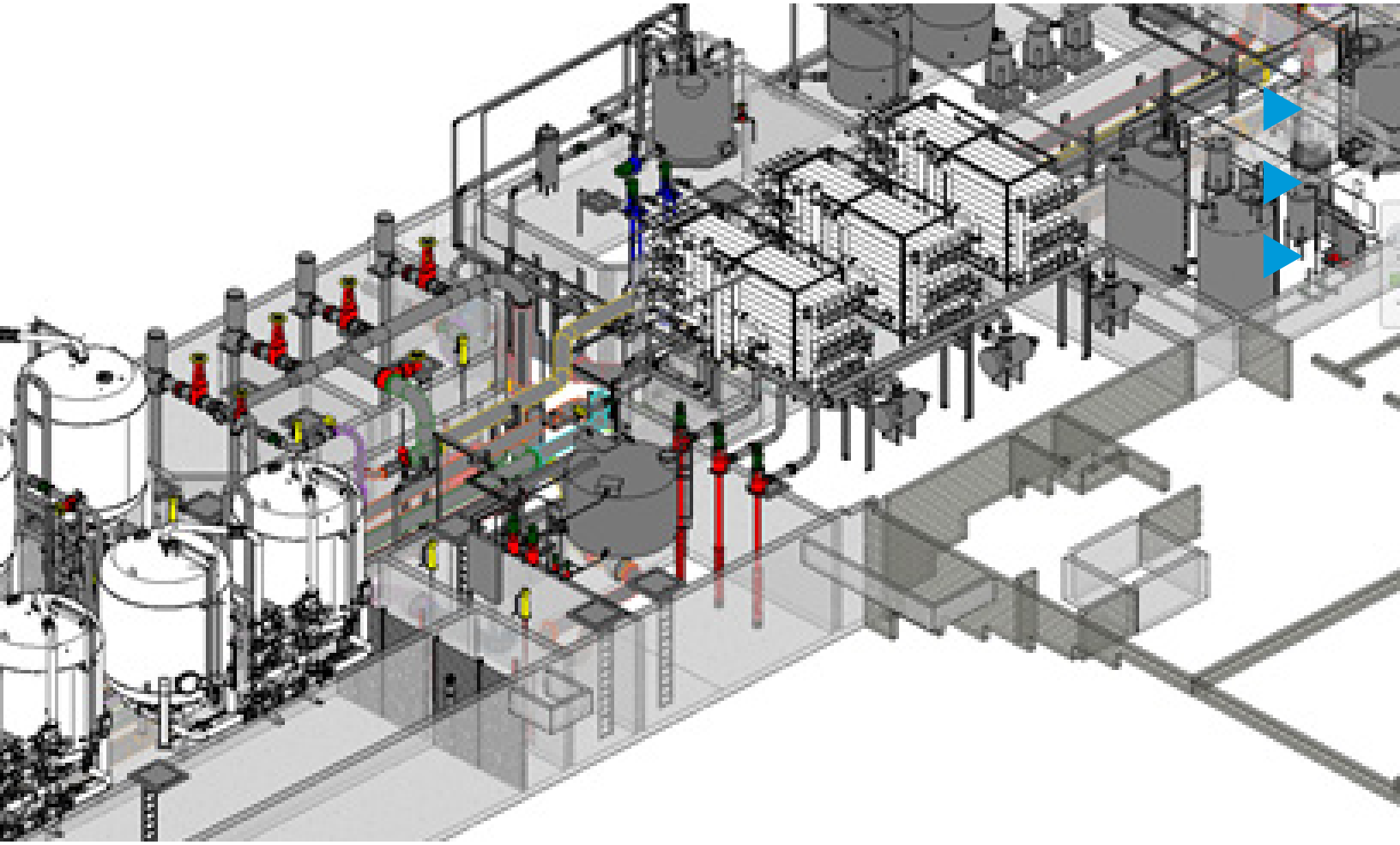
# Using BIM to Create a Multi-Trade State of the Art Water Treatment Plant



When GM McCrossin was contracted for the process piping, mechanical piping and ductwork for a new state of the art Water Treatment Plant, they leveraged the best construction technology tools including Trimble SysQue to keep up with the requirments and deliver quality results.

## Solution

Trimble® SysQue® managed data content, powered by Building-Data.net Autodesk® Revit® MEP

Find out more at http://mep.trimble.com

# overview

Modern construction projects require ever increasing speed, and place extreme pressures on contractors that derive their profitability from prefabrication, detailed trade coordination, and meticulous project planning. By utilizing SysQue, GM McCrossin was able to keep up with the schedule, model with manufacturer specific intelligent components, generate all their fabrication drawings, and share the model with the field for site construction.

Location
BELLAFONTE, PA
USA

## CHALLENGE

GM McCrossin is an ENR Top 500 Specialty Contractor located in Bellafonte, PA specializing in industrial and institutional projects including water treatment plants, process piping, and heavy mechanical construction. They were contracted for the process piping, mechanical piping and ductwork for a new state of the art water treatment plant at Pennsylvania State University

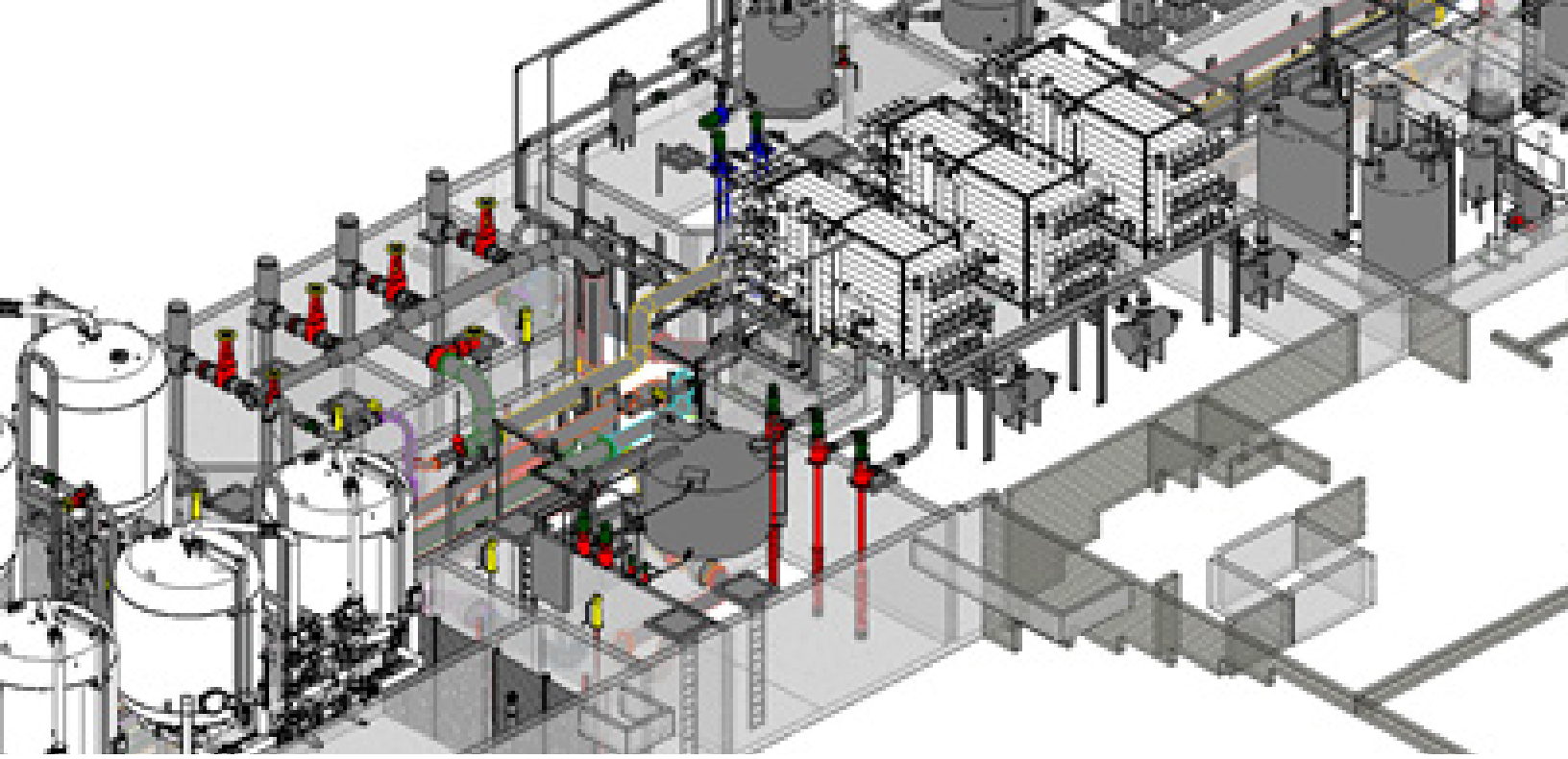
This project involved miles of stainless steel pipe connecting hundreds of different vessels, pumps, RO filter skids and other water treatment equipment. GM McCrossin had to coordinate their work with all the other building trades, as well as the equipment vendors. They were provided with an LOD 250 Revit model that was effective in conveying the design intent but lacked all the material standards, geometry, and joining methods and connectivity necessary to build from. Many of the equipment selections were determined late in the game and were never included in the project model. Most of the equipment models that GM McCrossin had to match their pipe up to were provided in Autodesk Inventor format rather than Revit.

## SOLUTION

GM McCrossin utilized SysQue to convert the engineer's Revit model into intelligent and constructible pipework. Using SysQue Pipe and the vast library of native Revit pipe, valve, fittings and specialty components, the model incorporated real world joining methods, brand and manufacturer's part numbers, and precise geometry allowing for streamlined procurement and 100% off site prefabrication. Mike Shamalla, the project design lead for GM McCrossin stated, "The SysQue Library is simply a game changer. Being able to download professionally built BIM data is clutch when I only have 8 hours in a day and a looming deadline."

"I couldn't do what I do without Revit + SysQue - the level of detail, sharing a model with the field that is accurate, shop drawings, spool drawings, BOM, all from the same model. Simply Brilliant."

–– Mike Shamalla



In order to integrate the equipment skids that were delivered in Autodesk Inventor format, Shamalla imported the equipment into Revit, placed pipe connector's where their pipework tied into the equipment, and then converted Inventor elements retained Revit parameters that SysQue Pipe connected with, making the entire model parametric. This meant that as equipment got set, if any variances between the models provided and the actual equipment were discovered, as soon as the real dimensions became known, the parametric relationship between the equipment and GM McCrossin's pipe was still intact, and revisions to their pipe model and fabrication drawings were incredibly fast and accurate.

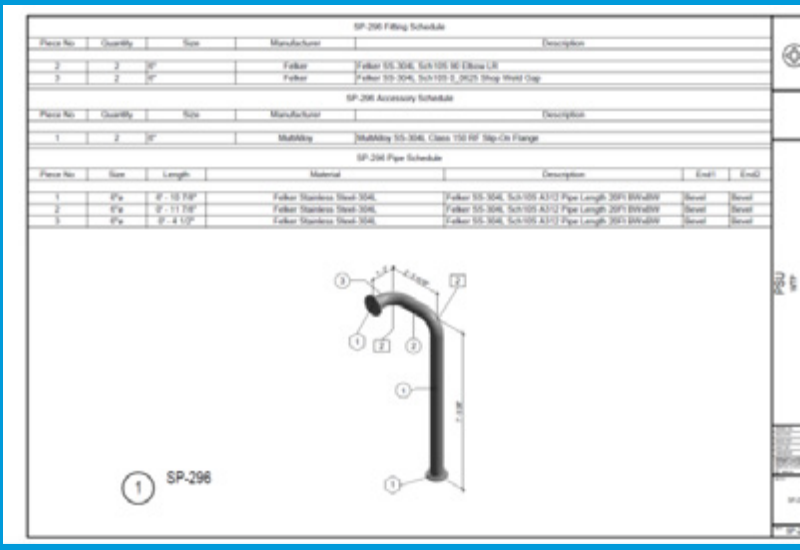
## Conveying the Ever Important "I" in BIM to the Field

Accurate modeling with a strategy to share, communicate, and update with field labor is a crucial, and perhaps complicated part of any contractor's workflow. GM McCrossin found SysQue to be the most powerful tool for field integration it has found on the market. Since SysQue components are native Revit objects, and Revit is the most collaborative construction platform on the market, GM McCrossin was able to utilize Autodesk's powerful collaboration tools to push models, sheets, material specs, and component part numbers to the field using Autodesk A360 for viewing on the foremen's laptops and iPads.

Sharing the model and updates was critical to coordinating the project detailers, fab shop, and jobsite with the latest and greatest information. "Not only does it make a fabulous picture that is easily digested - what you see is what you get. Our guys love the 3D model at the jobsite. Especially when it means that big pipes bolt together just like they look in the model."

# RESULTS

There was initially some skepticism from the consulting engineer, and other project stakeholders who were not familiar with SysQue and the fabrication aspect it brings to Revit, especially at the thought of a Subcontractor using a conceptual model for fabrication. But as construction progressed it has become evident to everyone that the Project is a resounding success for GM McCrossin and Pennsylvania State University. As Shamalla summarizes it, "We were able to fabricate all of the pipe off site - no field welds, and install it in a fraction of the time with far less labor than if we would have left some plain ends for site fitting." It is this kind of labor planning and cost savings that GM McCrossin relies on to be an industrial leader in their market, and to control their labor costs and project schedules.




## Process Piping Componentry

The process nature of this project and the niche stainless steel specialties it entailed lends to SysQue's core competencies:

- Native Revit Components
- Intuitive Ribbons and Graphical Interphase
- Customizable Spec Driven Services
- Over 6,000,000 lines of content as of May 2016

## SysQue Spool Generation

SysQue Spooling averts the manual nature of creating construction documentation. This automated routine enables the user to predefine what views and schedules they would like their fabrication shop to see, and automatically generates an LOD 400 drawing for construction that remains in the Revit model and maintains the bi-directional associativity inherent in Revit. SysQue managed data content, powered by Building-Data.net, enables designers and contractors to design in Autodesk® Revit® MEP with real-world, manufacturing-specific content that's ready for fabrication. We make it easier for designers and builders (contractors) to create precise and accurate project plans that are in line with MEP contractors' detailing, fabrication, manufacturing, and installation requirements. We help organizations reduce labor costs, improve accuracy of designs, and accelerate project timelines.

NORTH AMERICA
Trimble Inc.
10368 Westmoor Drive
Westminster CO 80021
USA