POINT VERGE

PROJECT SHOWCASE

MIDSTREAM BATCHING FACILITY STUDY

Overview

This project involved the design and construction of a large products “batching” facility for a major mid-stream company in Northern Alberta. The capital cost was $130M. The operator decided at the start of the project to utilize PointVerge™ (PVL) services for the Materials Management, with the intent of improving managing materials and eliminating cost over runs, material discrepancies and associated scheduling impacts they had been experiencing on their projects.

Material Management Processes

Material Management Kick-Off: A Materials Management “Kick-off” meeting was held with key stakeholders at the start of the detailed design phase for the project at the EPC’s office. The intent of the meeting was to clearly outline the Materials Execution Plan (MEP) and how all parties on the project were involved.

Materials Execution Plan (MEP) Roles: The kick-off meeting was used to clearly define the roles and responsibilities of the individuals who would be involved with following the MEP. PVL would have the responsibilities of Materials Management Coordinator (MMC), CAD specifications and parts number database maintenance, and QuBR™ report administration. PVL worked with stakeholders to manage the materials throughout the project and answer any materials questions that team members had throughout the project.

CAD Specifications and Part Numbers: The mechanical piping specifications were received from the client and built into the CAD program database for use by the designers. A database consisting of a complete set of individual part numbers designed by PVL were added to the specifications catalog library and assigned to the CAD piping specs. The part numbers were designed to allow for pricing information to be referenced in the BOMs being generated throughout the project.

QuBR Project Set-up: A project specific account in QuBR™ was configured by PVL for the management of all BOM data exported from the 3D models throughout the project. A set of custom reports were added to the account in preparation for materials control and tracking. These included reports for Quotation Requisitions, Purchasing, Factored Weld Diameter Inches, Insulation & Tracing, Valves, Piping Supports, Line Fill Volumes, etc. The reports were designed to support the various individual team members requirements.

Model Management Set-up: A set of 3D Piping and Structural Model Collector files were created. These files contained all Piping and Structural models attached as reference files and were used for the exporting of BOM files during the project. The site was divided into 7 individual Areas for construction purposes, and the collector files were created based on each area. This allowed for materials to be quickly identified and monitored based on their specific site location, construction schedule and the associated BOM export.

3D Model Auditing: A procedure of exporting BOMs from the 3D collector models was performed daily by the Materials Coordinator and uploaded to the QuBR™ project account. The MMC then used QuBR™ to download various detailed reports of pipe, valves, and fittings for use in verifying their compliance to the mechanical piping specifications. At the same time, the part numbers were also checked for accuracy to the Part Numbers database. Any items found to be problematic and required fixing in the models were gathered into Model Material Update (MMU) reports. These reports were given to the design lead for distribution to the responsible designers. Problems identified at the spec level were also sent to the design lead, CAD support, and engineering leads for resolution. The intent was to have materials checked at the design level, instead of being reviewed at the procurement and fabrication levels. This procedure ensured that materials in the 3D models were accurate well in advance of being requested for purchase and fabrication.

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Material Management Processes

FEED Study BOM RFQ Reports: Prior to the detailed design contracts being awarded, the FEED study of the project required Request For Quotation's for budgetary purposes and the selection of a PVF supplier. The EPC Procurement Lead sent the request for a BOM to the MMC in the form of an email. This email contained a description of exactly what the BOM report was going to be used for, since it would be a controlled document leaving the EPC office. A very important part of a MEP is procedures associated with document control.

The RFQ report was generated by the MMC and passed on to the document control lead for the assignment of a file name, revision, and tracking information. The RFQ MTO report contained an additional column with the individual part numbers and a blank column next to it titled "Unit Price". The procurement lead instructed the bidding vendors to populate the prices using the Unit Price field. This was a very important step to be followed so the pricing could be compiled into the QuBR™ pricing database for future reports.

Once the quotes were returned to the procurement lead and the bid evaluation process produced a preferred PVF vendor, they were forwarded to the MMC for input into the QuBR™ pricing database. These prices were now attached to the component part number database and could be used for all reports throughout the project.

Results

- This project was a huge success with respect to Materials Management. With the use of a PVL Materials Execution Plan procedures and QuBR™ software, the materials flowed seamlessly from design, through procurement, shipping/ receiving, and construction. The Owner was appreciative of the effort and how everyone involved worked together in a new way of executing Materials Management.
- The most prominent success indicator was that there was only one final Top-Up required by the construction contractor to complete the project. This was for $5,801, which was less than 0.015% of the purchase of over $4.2M for Pipe, Valves, and Fittings. The Client Project Manager made a point of calling the Materials Coordinator to verify the number was correct since they had never seen an amount that low before. He indicated expectations in the 5-10% range as being normal, which would have been between $200,000 - $400,000.
- The construction contractor was very satisfied with the accuracy of the materials and the shipping process. The project was never delayed or impacted because of material shorts or inaccuracies. It resulted in the fabrication and construction of the site being ahead of schedule and on budget.
- The Pipe, Valve, and Fittings supplier related their experience that the use of the MEP procedures allowed them to provide accurate and timely materials to the fabricator and site.
- The use of the Materials Drawdown was a success for the client. It helped speed up the invoice approval process for the engineer and for accounting to process payments. Discrepancies between the invoices and PO's did not exist.