steelXML

The Common XML Schema for the Electronic Procurement of Structural Steel

Volume 1. Overview

Version 1.0

American Institute of Steel Construction

Georgia Institute of Technology

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Contents

1 Background

The Metals Service Center Institute, the American Institute of Steel Construction and the Technical Committee on Structural Shapes had developed the computer-to-computer exhcange of information about structural steel products being shipped from a producer to a distributer to an end user, and the accurate labeling of the physical products using standard bar code technology. In 2004, the effort resulted in three-part standards of the bar coded shipping label, electronic Advanced Shipment Notice (ASN) XML data exchange format, and the electonic (mill) tets report data.

Working with several major steel mills, service centers and fabricators, AISC identified a better way to streamline and standardize the steel procurement process, which is the development of comprehensive XML schema, named the Common XML Schema for the Electronic Procurement of Structural Steel or steelXML in short, which specifies a standard procurement data exchange format for interoperability, while maintaining the heritage of previous electronic ASN XML data exchange format.

ASIC collaborated with the Digital Building Laboratory (DBL) at the Georgia Institute of Technology to develop the steelXML schema that can address the transactions and the communications between buyers and suppliers. AISC and DBL worked with representatives from major mills, service centers, and fabricators who are experts in each domain. Through the participation and dedication of these industry subject matter experts (SMEs), the development of exchange requirements and workflows reflecting the practical specifications of diverse transactions has been accomplished.

As part of this process an opportunity was provided for public review of the standard, public comment upon the standard, and committee consideration of all comments received. Questions regarding the Standard may be directed to AISC:

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2   Scope

This publication describes the Common XML Schema for the Electronic Procurement of Structural Steel (steelXML), a set of formal data specifications that allow steel procurement process through electronic data exchange. This is the first volume of a series of data specification publications that complete the steelXML documentation.

The specification covers data exchanges for entire structural steel procurement process. It specifies 17 XML schemas including E1. Availability Inquiry (E1-1. Send Availability Inquiry and E1-2. Respond to Availability Inquiry), E2. Request for Quotation (E2-1. Send RFQ, E2-2a. Request RFQ Revision, and E2-2b. Respond to RFQ), E3. Purchase Order (PO: E3-1. Issue Purchase Order, E3-2a. Confirm Receipt, and E3-2b. Confirm Purchase Order), E4. Order Status (E4-1. Request Order Status, E4-2. Send Order Status), E5. Advanced Shipment Notice (ASN), E6. Material Test Report (MTR), E7. Invoice, E8. Payment, E9. Sustainability (E9a. Send Sustainability Information Request and E9b. Respond to Sustainability Information Request), and E10. Bill of Landing.

The steelXML schemas shall serve as an interoperable platform to develop electronic data interchange (EDI) for specific transactions of each party for these procurement communications, and shall support the rapid response time, the reusable data library, and the electronic report system. Ultimately, the communication of EDI transactions between all of buyers and suppliers will be more effective throughout the entire procurement process.

Other documents in this series include:

Volume 1   Overview
Volume 2   Baseline, Country Code, Currency Code, and Element Code Schema
Volume 3   Availability Inquiry
Volume 4   Request for Quotation
Volume 5   Purchase Order
Volume 6   Order Status
Volume 7   Advanced Shipment Notice
Volume 8   Material Test Report
Volume 9   Invoice
Volume 10   Payment
Volume 11   Sustainability
Volume 12   Bill of Landing

3 Procurement Process Model in Business Process Model and Notation (BPMN)

The 17 structural steel procurement exchanges are identified in the generic process model defined according to the SMEs' discussions. The 17 exchanges are parts of 10 exchange workflow categories. The process model is intended to identify possible procurement exchanges and the user does not necesssary to follow the process as described in utilizing the steelXML schema.

The shaded BPMN data objects with # number in the following figures indicate 17 structural steel procurement exchanges. Four other data objects without # number do not use the steelXML schema are not covered in this specification
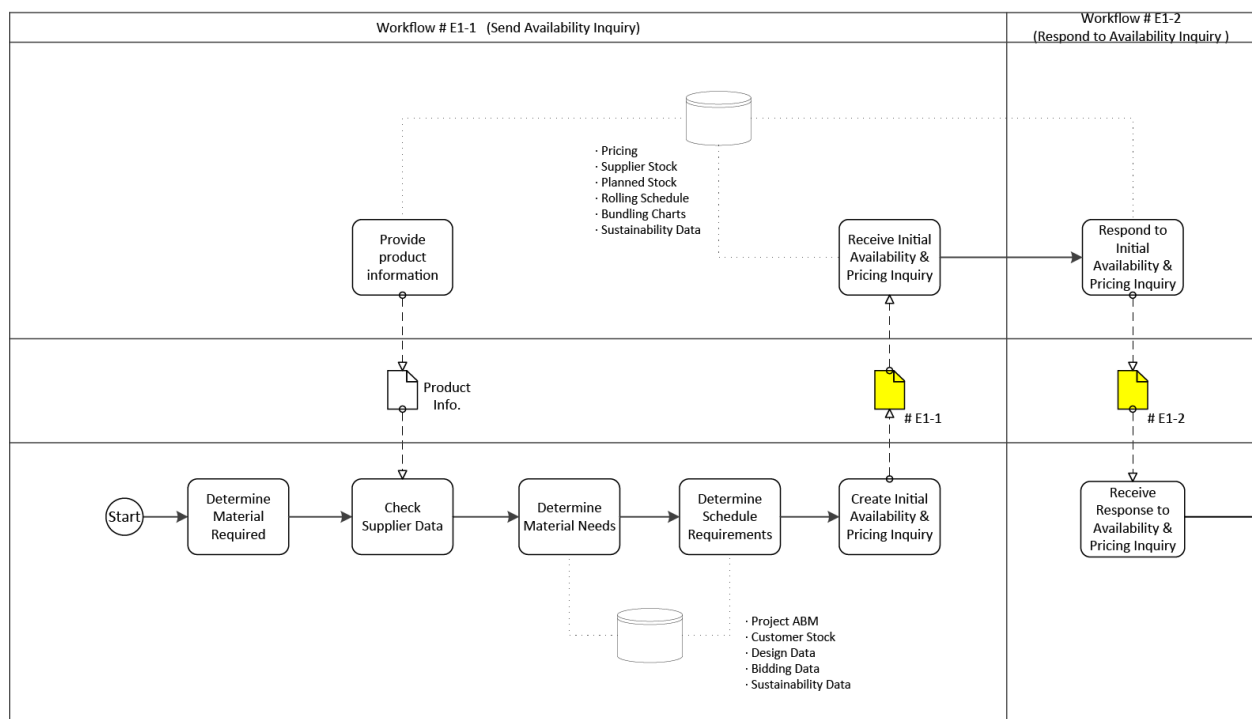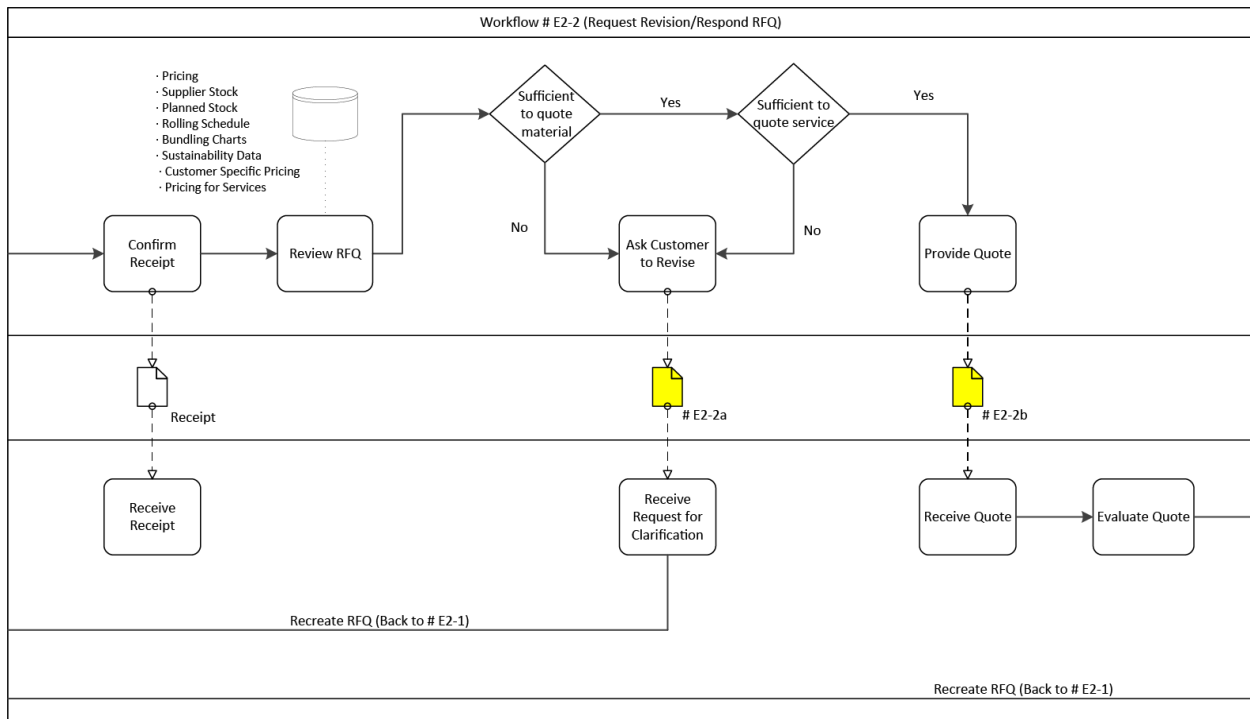

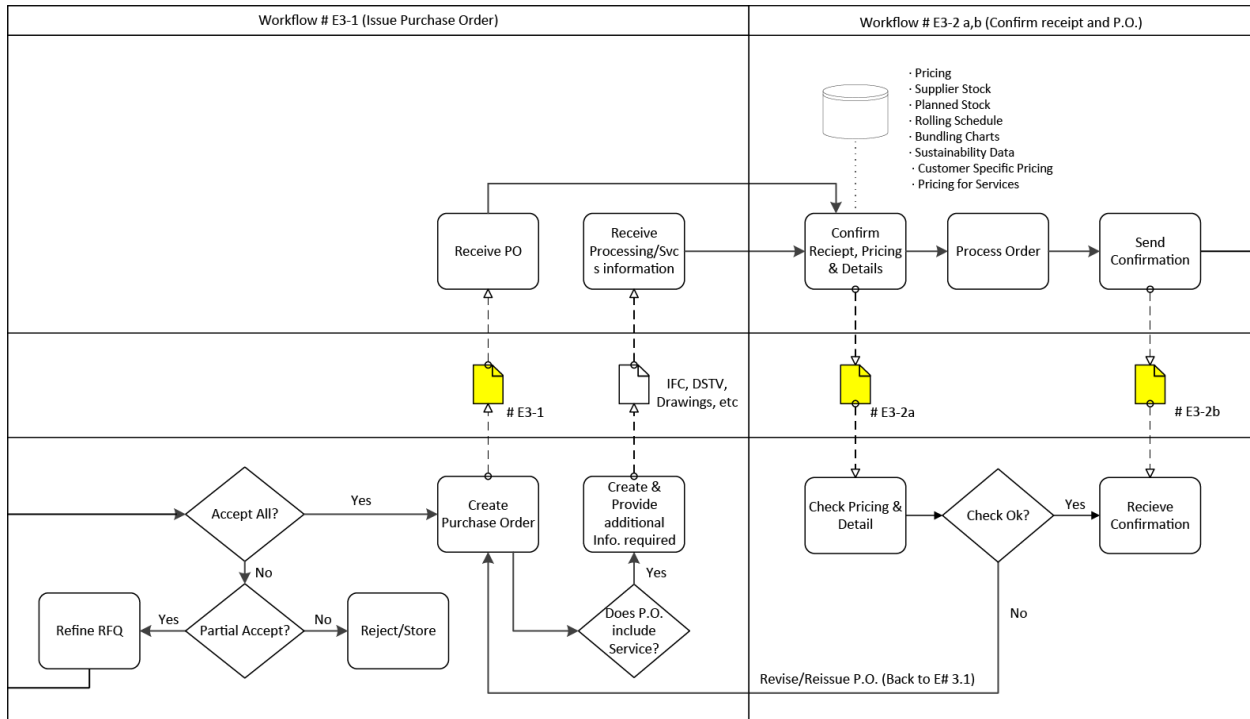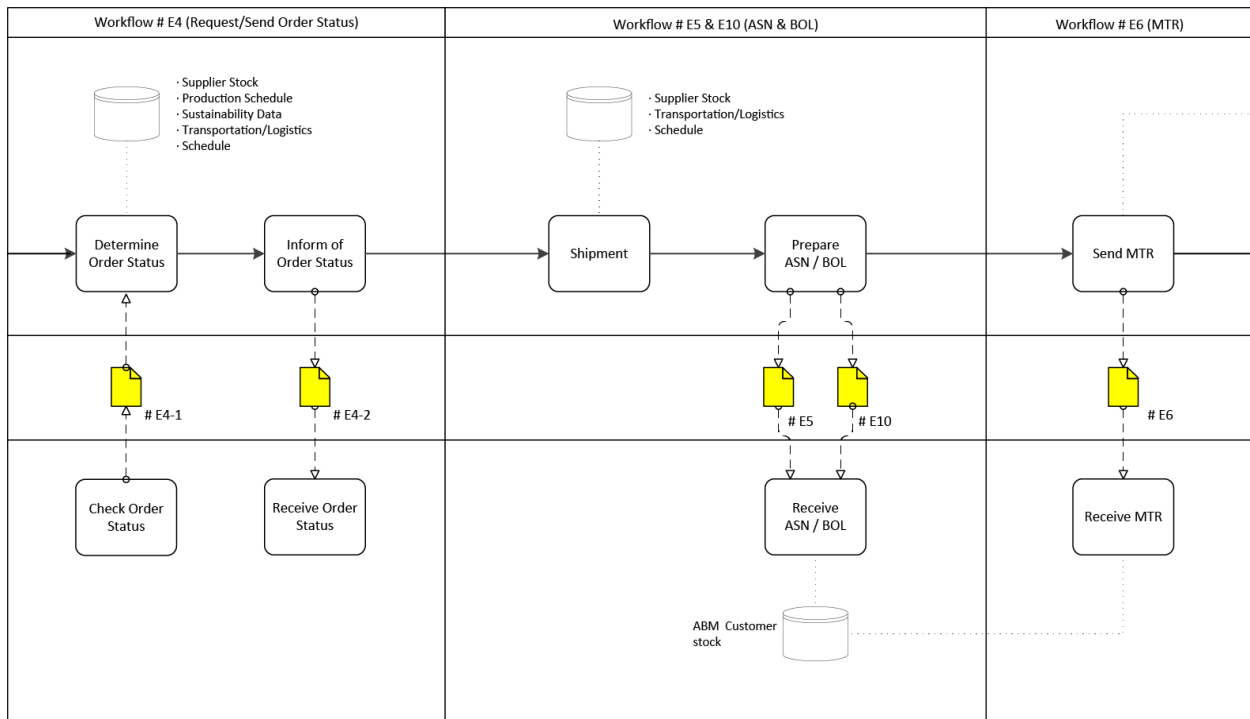**FIGURE 1:**   **SEND AVAILABILITY INQUIRY, RESPOND TO AVAILABILITY INQUIRY**
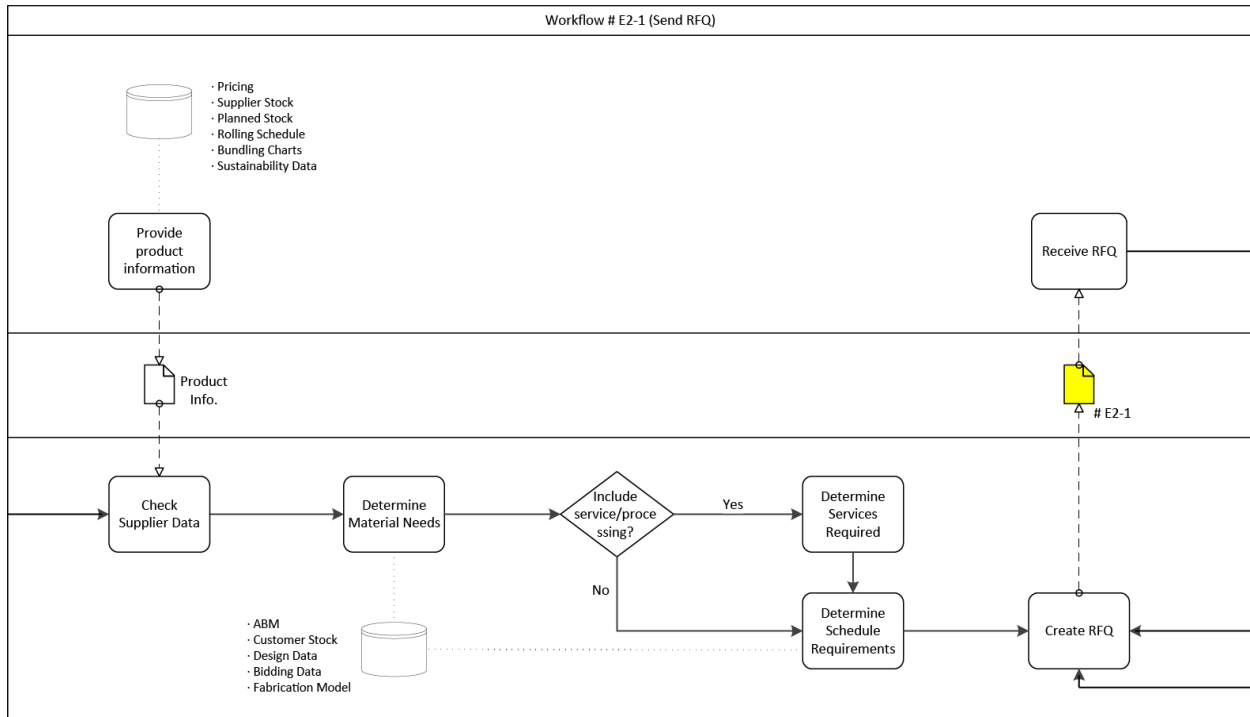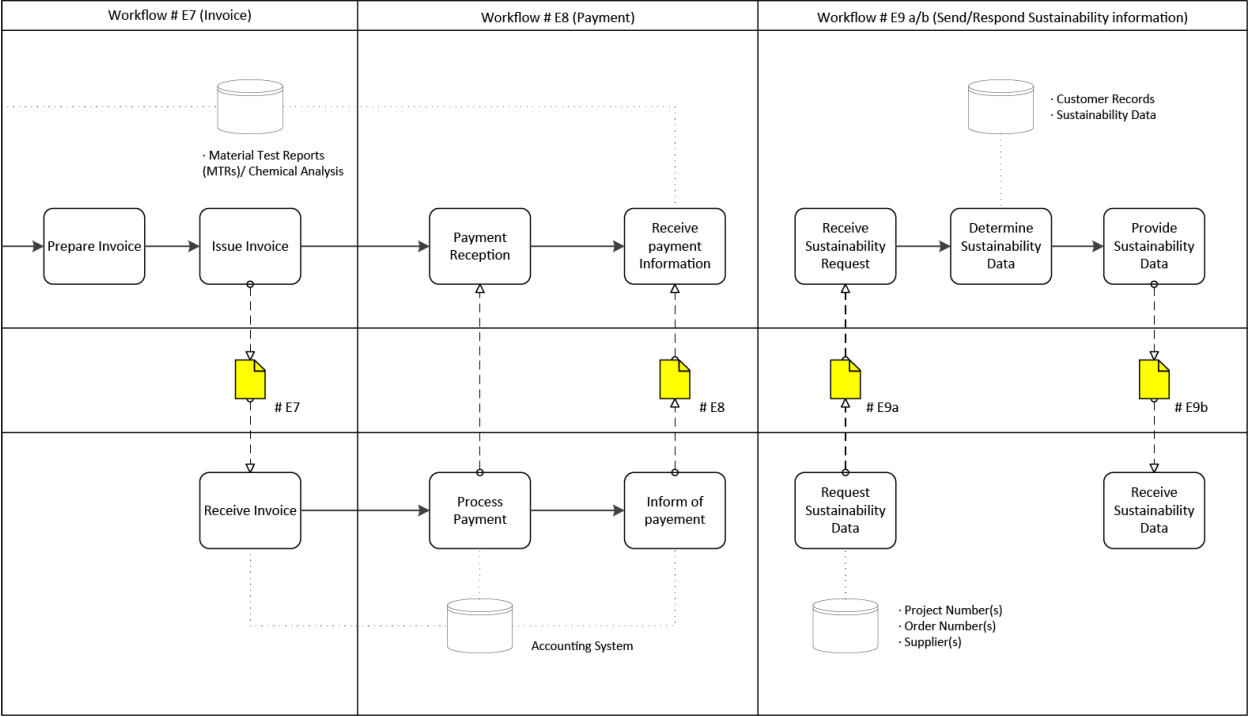
FIGURE 2: **SEND RFQ**

FIGURE 3: **REQUEST REVISION, RESPOND TO RFQ**

FIGURE 4: ISSUE PURCHEASE ORDER, CONFIRM RECEIPT, CONFIRM PURCHASE ORDER

FIGURE 5: REQUEST ORDER STATUS, SEND ORDER STATUS, ADVANCED SHIPMENT NOTICE, BILL OF LANDING, MATERIAL TESTING REPORT

FIGURE 6: **INVOICE, PAYMENT, SEND SUSTABABILITY INFORMATION REQUEST, RESPOND TO SUSTABABILITY INFORMATION REQUEST**

4 Schema Structure

The steelXML Schema is a collection of XML schemas (XSDs) including baseline schema, country code schema, currency code schema, element code schema and 17 exchange schemas.

All schemas define elements and types in the "AISCProcurement" targetNamespace.

An XSD file with version uses the following convention: CamelCasedSchemaNameVersionNumberrRevisionNumber.xsd (Example: Baseline0r39.xsd for Baseline schema version 0, release 39)

An XSD file without version uses the following convention: CamelCasedSchemaName.xsd (Example: CountryCode.xsd for Country Code schema)

The country code schema follows the two-letter code (alpha-2) of the ISO 3166-3:2013 "Codes for the representation of names of countries and their subdivisions".

The currency code schema follows the three-letter code of the ISO 4217:2008 "Codes for the representation of currencies and funds". The first two letters of the ISO 4217 three-letter code are the same as the code for the country name in ISO 3166, and where possible the third letter corresponds to the first letter of the currency name.

The Baseline schema <include> CountryCode.xsd, CurrencyCode.xsd, and MaterialCode.xsd. The Baseline schema contains type definitions used in 17 exchanges schemas, and does not contain any element declation.

The exchange schemas <include> the Baseline schema, selectively declare elements by constraining the Baseline schema defined types. Therefore, all exchange schemas share the same base types and the steelXML schema maintains consistency throughout all exchanges.

Exchange schama should have a Header element and a Body element. The Header element primarily contains the general information of customers, suppliers, shipping, invoices, and transaction. The Body element contains the detailed specification of orders and items, such as sizes, materials, quantities, finishes, shapes, grades, and test results. The contents of the Header element and the Body elements are constrained in each exchange schema.