Introduction

Purpose

This manual is designed to be used by Contractor and Agency representatives for the requirements of environmental product declaration collection only on eligible ODOT Contracts. The requirements listed in this document are in accordance with ORS 184.879, Oregon Administrative Rule 731-005-0910 and is referenced by Project Specifications.

As the practice of developing environmental product declarations develops and matures, items listed as a “preference” represent what is currently a best practice, and is likely to become a requirement in the future.

Format

This manual is divided into six main sub-sections:

(1) Definitions & Acronyms
(2) Projects Requiring EPD Submittal
(3) Data Quality
(4) Covered Materials
(5) Eligible Bid Items
(6) EPD Submission

Definitions & Acronyms

EPD – Environmental Product Declaration

PCR- Product Category Rule

ISO – International Organization for Standardization

CMD- Concrete Mix Design

JMF – Job Mix Formula

Asphalt Paving Mixture – Uniformly coated mixture of asphalt cement, graded aggregate and additives as required.

Concrete – Composite material consisting of a mixture of cement, aggregates and water. Concrete may also include the addition of supplementary cementitious materials (SCMs), chemical admixtures or other additions such as fibers or pigments as approved.

Environmental Product Declaration: An environmental declaration providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information. ISO 14025 refers to these as a Type III EPD. (ISO 14025). The current state of practice for EPDs is to document the production stage of a material, this is also known as cradle-to-gate. Cradle-to-gate EPDs report the lifecycle modules A1-A3 of a product. The A1 module documents the impacts from the raw material extraction, the A2 module documents the impacts from the transportation of the raw materials to the manufacturing site and the A3 module documents the impacts from the manufacturing. This manual is referencing cradle-to-gate EPDs when EPDs are referenced.

Precast Concrete - Precast concrete components are made by placing concrete and reinforcement into formwork at the plant and curing. These items may be conventionally reinforced or prestressed.

Shotcrete – A method used to place concrete onto a surface at high velocity. The concrete mix contains admixtures and additives as necessary to provide a quick setting time, high early strength, and satisfactory adhesion to the substrate.

Steel

> Reinforcing Steel – Steel products used to provide strength and support to a concrete product. This refers to rebar, epoxy-coated rebar, and galvanized rebar.
>
> Structural Steel- shall consist of the elements of the structural frame that are shown and sized in the structural design documents, essential to support the design loads. (AISC 303-22)
>
> Other Steel, Iron or Metal Items- other steel, iron or metal items that are not generally described as structural steel, these items are described in Section 2.2 AISC 303-22.

Product Category Rule (PCR) – set of specific rules, requirements and guidelines for developing Type III environmental declarations for one or more product categories.

Product Category – group of products that can fulfill equivalent functions.

Projects Requiring EPD Submittal

Projects meeting the requirements of OAR 731-005-0910 and containing 00160.65 are required to submit EPDs. These requirements only apply to highway construction contracts with an Engineers Estimate at or above $3 Million at the date of advertisement. This requirement also applies to maintenance projects with an estimate of $3 Million at the date advertised.

The project size threshold does not apply to additions after the date of advertisement. Items such as contract change orders, force account items or construction engineering are therefore excluded.

Data Quality

In accordance with ORS 184.879 and OAR 731-005-0910, ODOT is required to collect EPDs complying with ISO 14025. ISO 21930 and sub-category PCR's allow for differing levels of data specificity while still complying with ISO 14025 EPD standards. It is anticipated that over time as PCR requirements become more stringent and the practice of EPDs becomes more standardized, the site-specific data will be required. Until the PCRs mandate the data quality, its ODOT's preference that EPDs be generated using product-specific and facility-specific data for the finished product when available, so that it documents an individual product from an individual facility's impacts. These are also referred to as facility-specific EPDs. When facility-specific information is available, EPDs should be developed using facility-specific data in upstream processes, including the raw material extraction resources from module A1 used to manufacture the eligible materials in module A3 (for example but not limited to asphalt binder and cement). EPDs provided must be in accordance with the relevant PCR.

For concrete, shotcrete, concrete masonry units, and precast concrete EPDs, the upstream data must contain cement-specific data when available. If a precast concrete EPD representing a single precast concrete item is not available, an EPD representative of an average of a group of similar products from a single facility is acceptable.

For steel EPDs, provide mill-specific data when available. If not available, a product-specific EPD using an average of plant data across multiple mills of a single manufacturer is acceptable.

If the same eligible materials are being produced/supplied from multiple plant sites, separate facility-specific EPDs are required from each plant, if available.

Covered Materials

The Contactor is required to submit EPDs for the Covered Materials as defined in ORS 184.879 and OAR 731-005-0910. Covered Materials are:

Concrete, including ready mix concrete, shotcrete, precast concrete and concrete masonry units;

Asphalt Paving Mixtures;

Steel, including rebar, reinforcing steel, structural steel, hot-rolled sections, hollow sections, plate steel, and cold-formed steel.

These covered materials require an EPD if placed more than the small quantity exemptions listed in OAR 731-005-0910 and further explained in Table 2 of this manual.

OAR 731-005-0910 affords ODOT the ability to apply the EPD requirement to specific bid items. This manual provides clarification and guidance on which bid items require an EPD submittal.

Eligible Bid Items

The Oregon Standard Specifications for Construction is subdivided into section numbers by different types of construction. Only the bid items providing the listed materials from the Section numbers listed below in Table 1- Eligible Bid Items, require EPDs to be submitted.

TABLE 1- ELIGIBLE BID ITEMS

Section	Type of Construction	Materials	Notes
396	Shotcrete Slope Stabilization	Shotcrete	Concrete EPD
445	Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe	Non-Reinforced Concrete Pipe, Reinforced Concrete Pipe	Precast Concrete EPD for finished product
470	Manhole, Catch Basins, and Inlets	Precast Manholes, Bases, Manhole Top Slabs, Grade Rings, Catch Basins, and Inlets	Precast Concrete EPD for finished product
470	Manhole, Catch Basins, and Inlets	Commercial Grade Concrete, Reinforcement	Concrete EPD and Steel Reinforcement EPD for cast-in-place items
512	Drilled Shaft	Concrete, Reinforcement	Concrete EPD and Steel Reinforcement EPD
530	Steel Reinforcement for Concrete	Reinforcement	Steel Reinforcement EPD
540	Structural Concrete	Concrete	Concrete EPD
550	Precast Prestressed Concrete Members	Precast Prestressed Members Girders, Slabs and Box Beams	Precast Concrete EPD for finished product

560	Structural Steel for Steel Bridges	Structural Steel for Bridges	Structural Steel EPD for Plate, Hot-Rolled Sections, Hollow-Structural Sections and Cold-Formed
595	Reinforced Concrete Box Culverts	Concrete, Reinforcement	Concrete EPD and Steel Reinforcement EPD for cast-in-place items
595	Reinforced Concrete Box Culverts	Precast RCBC	Precast Concrete EPD for finished product
596A	Mechanically Stabilized Earth Retaining Walls	Precast Concrete Panel Facing	Precast Concrete EPD for finished product
596B	Precast Retaining Wall	Precast Bin Unit, Wet Cast Block	Precast Concrete EPD for finished product
596C	Cast-In-Place Retaining Wall	Concrete, Reinforcement	Concrete EPD and Steel Reinforcement EPD for cast-in-place items
597	Soundwalls	Concrete Blocks (Concrete Masonry Units)	Concrete Masonry Unit EPD and Steel Reinforcement EPD
597	Soundwalls	Precast Concrete Soundwalls	Precast Concrete EPD for finished product
597	Soundwalls	Concrete, Reinforcement	Concrete EPD and Steel Reinforcement EPD for cast-in-place items
744	Asphalt Concrete Pavement	Asphalt Concrete Pavement	Asphalt Paving Mixture EPD
745	Asphalt Concrete Pavement (Statistical Acceptance)	Asphalt Concrete Pavement	Asphalt Paving Mixture EPD
755	Continuously Reinforced Concrete Pavement	Concrete, Reinforcement	Concrete EPD and Steel Reinforcement EPD for cast-in-place items
756	Plain Concrete Pavement	Concrete, Reinforcement	Concrete EPD and Steel Reinforcement EPD for cast-in-place items
759	Misc Portland Cement Concrete Structures	Concrete	Concrete EPD
820	Concrete Barrier	Precast Concrete Barrier	Precast Concrete EPD for finished product
820	Concrete Barrier	Concrete, Reinforcement	Concrete EPD and Steel Reinforcement EPD for cast-in-place items

Some of the bid items' bidding units are not the same units as listed in Table 2- Small Quantities (for example, lump sum, each, etc.). It is the contractor's responsibility to convert those materials to determine the limits of the small quantity table are not exceeded. In the event there are multiple bid items from the same Section number, the material quantity should be aggregated by Section Number.

A material cannot be installed prior to the EPD submittal and review by the Engineer.

TABLE 2- SMALL QUANTITIES

Material	Quantity Limits	Notes
Concrete (for each type and class)	50 cubic yards	EPD required for each mix
Shotcrete (wet mix only)	50 cubic yards	EPD only required for wet mix shotcrete
Asphalt (per mix)	2,500 tons	EPD required for each mix
Reinforcing Steel	15,000 lbs.	EPD from each mill
Structural Steel (Structural Steel Plate, Hot-Rolled Sections, Hollow-Shape Sections & Cold Formed Steel)	5,000 lbs.	EPD from each mill

EPD Submission

According to OAR 731-005-0910 and 00160.65, an EPD is required to be submitted on covered materials in Section 4 of this Manual. Submit an EPD to ODOT Construction Section at EPDs@odot.oregon.gov based on the following timelines:

- Concrete –
  - Ready Mix and Shotcrete
    - At least two weeks prior to placement.
  - Precast Concrete, Precast Prestressed Concrete Members and Concrete Masonry Units
    - Prior to incorporating into the work
- Asphalt Paving Mixtures –
  - At least two weeks prior to placement.
- Steel – Structural Steel and Reinforcing Steel
  - Prior to incorporating into the Work

In the event the PCR or EPD expires during the project, the EPD will be considered valid for the project if it is valid on the date of bid. It is preferred that an unexpired EPD from an expired PCR be reproduced for the applicable material using the current PCR.

EPDs herein are only exempted if:

- The State Construction Material Engineer determines that an EPD meets the listed exemptions in ORS 184.879 and a contract change order is issued.

Note: ORS 184.879 lists several potential exemptions that the State Construction and Materials Engineer may consider on a case-by-case basis. However, if EPDs are on a project contract then they are a contractual requirement.

Each EPD submittal must show the following information:

- Contract Number
- Bid Item Quantity
- Material Supplier Information
- Material’s Declared Unit

- EPD declaration number and PCR information
- Mandatory Impact Indicators for modules A1, A2, A3 and A1-A3 (GWP, ODP, EP, AP and POCP).
- PDF copy of the EPD

References

ISO, 2010. Environmental labels and declarations – Type III environmental declarations – Principles and procedure. ISO14025: 2010

ISO, 2017. Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services. ISO21930: 2017