



Contractor & Project Staff Responsibilities: Meeting Agendas-Tools-Data Entry

CDOT EPD Workshop June 8, 2022



Introduction

- General Project Responsibilities
- EPD Meeting Agenda Topics
- EPD Submittal Timing
- Determining Each EPD Required
- EPD Quantity Calculation Tool
- EPD Data Entry Form
- Summary/Questions





Contractor & Project Staff Responsibilities



All Project Staff - *Communicate early about project expectations (**Agendas**)*

CDOT Project Staff

*Read and use the **Protocol***

*Use **tool** to determine EPD needs*

Notify Contractor of EPDs required

Subs and Prime Contractors

Read the Protocol

Identify your EPD bid item suppliers

Request EPDs and submit them on time



Preconstruction and Pre-Paving Meeting Topics

New Construction Meeting Agenda Topics

- Preconstruction Meeting
- Concrete Pre-Paving Meeting
- Asphalt Pre-Paving Meeting

The Pre-Paving Agendas have topic to simply request Approved Mix Design EPDs

The Preconstruction meeting has a full new section giving project EPD guidance





Preconstruction Meeting Topic

ALL	G. Environmental Product Declarations (EPD's)			G. Environmental Product Declarations	
ALL	1. Do the Project Specifications contain the Standard Special Provision - Revision of Sections 101 and 106 - Environmental Product Declarations			Standard Special Provision - Revision of Section 101 and 106 - Environmental Product Declarations	
ALL	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	If SSP for EPD's is included check Yes and proceed with this section, if no, Skip to Section H of the Agenda.
YES	2. Review Project Bid Items/Quantities to determine EPD submittal requirements - See Appendix O of the Field Materials Manual			See Project Plans and Appendix O of the Field Materials Manual	
YES	3. Discussion and documentation of EPD Submittal Responsibilities and timing			Discuss who will be submitting (PRIME or Sub) for eligible materials EPD submittals.	
YES	BID ITEM	EPD's Required	RESPONSIBLE SUBMITTER		
YES					
YES			Reference CDOT Bid Item Number and required EPD's Example 503-XXXXX; EPD's required for Concrete Class BZ and Reinforcing Steel, Responsible Submitter: Prime Contractor or Sub		



Timing Requirements for EPD Submittals

FMM Appendix O - Environmental Product Declaration Protocol

EPD SUBMITTAL TIMING

The awarded Contractor of an eligible project shall provide the required EPDs for those eligible materials identified a minimum of two weeks prior to materials placement, or before they are permanently incorporated into the work.



Determining Each EPD Required

Review your bid items and mark those included in Protocol Table 1

Item Number Category	Item Description	Included Item Number / Range
206	Structure Backfill (Flow-Fill)	206-00065
310	Hydraulic Cement	310-00900
403 ¹	Asphalt Mixtures (HMA/SMA/WMA)	403-09210 through 403-96660
412 ¹	Portland Cement Concrete Pavement (PCCP)	412-00200 through 412-01500; 412-06000; 412-06060
503	Drilled Shafts	503-00012 through 503-00102

Mark project bid items that are in the specified range





Determining Each EPD Required

Determine if your bid items exceed quantities in Protocol Table 2

Item Number Category	Item Description	Quantity Limits	Unit
206	Structure Backfill (Flow-fill)	50	CY
310	Hydraulic Cement	150	Ton
403	Asphalt Mixtures (HMA/SMA/WMA)	500	Ton
412	Portland Cement Concrete Pavement (PCCP)	1,000	SY
601	Structural Concrete (All Classes)	50	CY
602	Reinforcing Steel	15,000	LB

- Table 2 sets limits for most of the items listed in Table 1
- 4 bid item types require separate concrete & steel quantity calculations
 - 503 Drilled Shafts
 - 504 CIP Walls
 - 604 CIP Inlets
 - 606 CIP Rails



Using the EPD Quantity Calculation Tool

CDOT is providing an Excel spreadsheet tool to quickly calculate materials quantities for EPD items:

- Pulldown Menus to target the project EPD bid items
- Simple data entry for project bid item quantities
- Automatic calculations of EPD quantities based on simple item quantity input
- Flags to show which items require EPD
- EPD Declared Unit conversion calculator (used for EPD data entry)





Using the EPD Quantity Calculation Tool

A	B	C	D	E	F	G	H	I	J
1 EPD Project Quantity and Declared Unit Calculator									
2									
3 1. Pull down the list of EPD items for each of the items that you have on your project.									
4 - Item details will auto-populate and yellow data entry cells will be labeled									
5 2. Enter your project item dimensions or known plan quantities into the yellow cells for each item									
6 - cell header will prompt for the input required. Green cells will give calculated results, as needed.									
7 3. Total construction materials quantity is calculated to check against EPD Quantity Limits									
8 4. If project material quantity exceeds EPD Quantity Limit, the material supplier shall submit EPD									
9 - See notes column for guidance on steel and structural concrete individual items that shall be added together for EPD determination									
10									
Bid Item Category	Bid Item Description	Specific Project Bid Item #s Requiring an EPD	Interpretation	Type of construction material documented in the EPD	EPD Quantity Limits	Unit			

-
- 206
- 310
- 403
- 412 (paving concrete mix)
- 412 (steel tie bars)
- 412 (steel dowel bars)
- 503 (structural concrete mix)

- Color coded instructions
- Project bid item pulldown menus



Using the EPD Quantity Calculation Tool

Bid Item Category	Bid Item Description	Specific Project Bid Item #s Requiring an EPD	Interpretation	Type of construction material documented in the EPD	EPD Quantity Limits	Unit				
							Enter Total Tons			
403	Asphalt Mixtures(HMA/SMA/WMA)	403-09210 through 403-96660	EPD submittal for each asphalt mixture design and plant location required. If 411 - Asphalt Cement is paid separately, it shall be included in the 403 EPD submittal item. For portable Plant EPD Guidance, see footnote 1 below.	paving asphalt mix	500	Ton	11500			
							Enter Total CYs			
601	Concrete (All Classes)	601-01000 through 601-05900	Separate EPD submittals are required for each class of concrete and mix design for each supplier.	structural concrete mix	50	CY	110			
							Enter Total LBs			
602	Reinforcing Steel	602-00000 through 602-00025	Separate EPD submittals are required for each mill supplying steel.	steel	15000	LB	2500			

Notes	EPD Required When Indicated Below
	EPD REQUIRED
	EPD REQUIRED
	EPD NOT REQUIRED

- No calculation if bid item has Table 2 unit limits
- Simple Flags for EPD Required or Not Required



Using the EPD Quantity Calculation Tool

Bid Item Category	Bid Item Description	Specific Project Bid Item #s Requiring an EPD	Interpretation	Type of construction material documented in the EPD	EPD Quantity Limits	Unit	Drilled Shaft Diameter (FT)	Drilled Shaft Length (FT)	Number of Drilled Shafts	Total Concrete (CY)
503 (structural concrete mix)	Drilled Shafts	503-00012 through 503-00102	Separate EPD submittals for concrete and reinforcing steel items are required. See Contractor's Drilled Shaft Installation Plan and Shop Drawings for concrete and steel quantities or calculate manually based on plan details.	structural concrete mix	50	CY	4	40	10	186.1684535
503 (reinforcing steel)	Drilled Shafts	503-00012 through 503-00102	Separate EPD submittals for concrete and reinforcing steel items are required. See Contractor's Drilled Shaft Installation Plan and Shop Drawings for concrete and steel quantities or calculate manually based on plan details.	steel (reinforcing)	15000	LB	17000			

- Calculation needed if bid item is not paid in Table 2 units
- Calculations convert quantities into CY of Concrete or Pounds of Steel depending on the bid item type
- Inlet, wall, and rail items convert to concrete and steel

Notes			EPD Required When Indicated Below
Total Concrete (CY)			
186.1684535			EPD REQUIRED
	See Plan sheets for total steel quantities		EPD REQUIRED



Using the EPD Quantity Calculation Tool

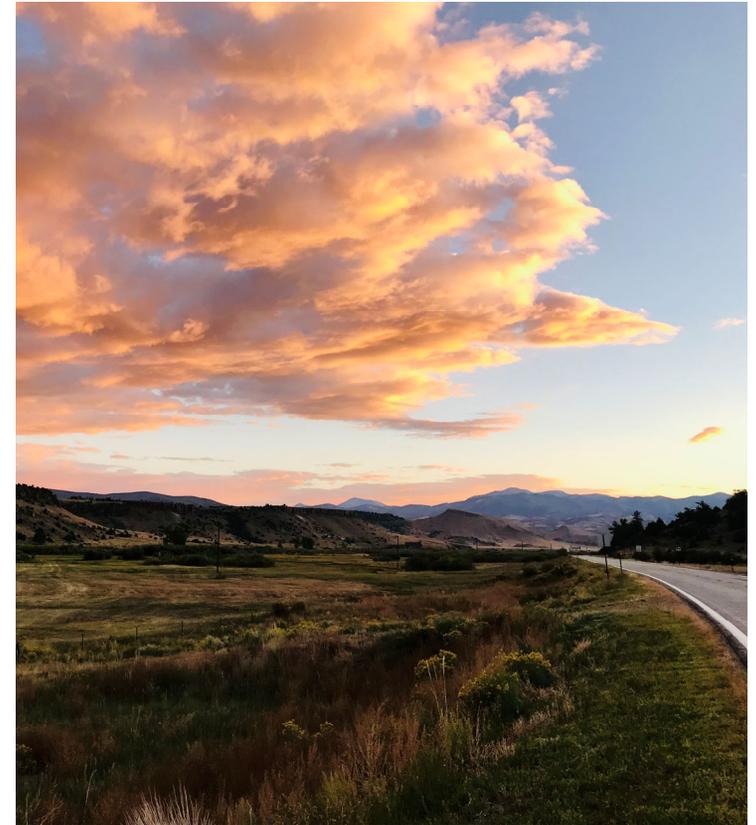
Bid Item Data							EPD Declared Unit Calculator				
Bid Item Category	Bid Item Description	Height (FT)	Number of Inlets	Total Concrete (CY)	Total Steel (LB)	Notes					
604 (Type C)	Inlets/Drainage Structures (Cast-in-Place)	10	20	58.00	4720.00	Round height to nearest 0.5 (FT) from 2.5 (FT) to 11.5 (FT)	Cubic Meters of Concrete	44.34		Metric Tons of Steel	2.14

- EPDs are reported in metric “Declared Units”
- Item quantities are converted to Declared Units
- These quantities are used during EPD data entry



EPD Submission Background

- A long-term solution (OnBase) is in progress with OIT.
- The Google form will save data to a Google sheet which will temporarily be used as a database.
- A fictional project and example EPD will be used, however, examples will be posted for all eligible materials (concrete, cement, steel, & asphalt)





EPD Submission Form



COLORADO
Department of Transportation

CDOT Environmental Product Declaration (EPD) Submission

Note: A Google email address (Gmail) is required to submit information with this form.

Please contact CDOT_EP@state.co.us if you have any questions or special accommodation needs.

hailey.goodale@state.co.us [Switch account](#) 

The name and photo associated with your Google account will be recorded when you upload files and submit this form. Your email is not part of your response.

[Form](#)

* Required

Email *

Your email

Name of Submitter *

Your answer

Company of Submitter *

Your answer



EPD Submission Form

Project Information

CDOT Subaccount Number *

12345

CDOT Region/Location *

- Region 1 - Denver/Central Colorado
- Region 2 - Southeast Colorado
- Region 3 - Northwestern Colorado
- Region 4 - Northeastern Colorado
- Region 5 - Southwestern Colorado

Contact Email for Responsible EPD Collection Party (CDOT or Consultant Project Engineer) *

CDOT_PE@state.co.us

Prime Contractor *

ABC Construction



EPD Submission Form

Material Information

CDOT Bid Item Number (E.g. 100-00000) *

403-3475

Material Type *

Concrete

Cement

Asphalt

Steel

Other: _____

Quantity of Bid Item Material *

5000

Bid Item Material Unit *

Ton (TON) ▼

Special Provisions Pertaining to the Material (If Applicable)

Your answer



EPD Submission Form

Material Supplier Name *

Elam Construction

Material Supplier County (Mobile Plants Only)

Your answer

Material Supplier Address *

2353 River Rd

Producing Mill for Steel (If Applicable)

Your answer

Material Supplier City *

Grand Junction

Producing Mill for Steel Location (If Applicable)

Your answer

Material Supplier State *

Colorado



Material Supplier Name

Company Information

Elam Construction is an asphalt mixture producer.

Roland Hot Plant asphalt plant

2353 River Road

Grand Junction, CO 81505

USA

Material Supplier Address



EPD Submission Form

EPD and Product Category Rule Information

EPD File Upload (PDF Preferred) *

PDF Asphalt EPD.pdf X

[Add file](#)

EPD Declaration Number *

48.133.276v1

EPD Declaration #



This declaration is an EPD in accordance is *Product Category Rules for Asphalt Mixt* environmental impacts associated with t

Declaration Number: 48.133.276 v1

Date of Issue: April 19, 2022 **Per**

This EPD is valid for asphalt mixtures prod to inform this EPD reflect plant operations

This EPD can be found at <https://asphalt>

LCA performed by: Ben Ciavola, PhD



EPD Submission Form

LIFE CYCLE INVENTORY

EPD Type *

- Plant/Facility Specific (specific producer and location)
- State Specific (Colorado specific)
- Supplier Specific (average of multiple locations)
- National Industry Average
- Other: _____

Type of EPD

This EPD was created using plant-specific data for asphalt mix production of the production stage (A1-A3). It is due to asphalt mixture design, supplier locations, manufacturing processes, efficiencies, and energy consumption.

Bid Item Material Constituents | Used Facility Specific Data for EPD Development (e.g. asphalt binder, cement and milled steel fabrication)

N/A

EPD Publication Date *

Date
04/19/2022

EPD Expiration Date *

Date
03/31/2027

environmental impacts associated with the identified life cycle stages of the described product.

Declaration Number: 48.133.276 v1 **Software version:** 2.0.0

Date of Issue: April 19, 2022 **Period of Validity:** March 31, 2027



EPD Submission Form

Product Category Rule / Standard Used for EPD Development *

- Cement: NSF PCR for Portland, Blended, Masonry, Mortar, and Plastic (Stucco) Cements. Version 2. March 2020
- Asphalt Mixtures: National Asphalt Pavement Association Product Category Rules for Asphalt Mixtures. Version 2. April 2022.
- Concrete: NSF PCR for Concrete. Version 1. February 22, 2019
- Precast Concrete: NSF PCR for Precast Concrete – UNCPC: 37550. Version 3. May 05, 2021
- Steel: UL PCR Guidance for Building-Related Products and Services Part B: Designated Steel Construction Product EPD Requirements. Standard 10010-34, Edition 2. August 26, 2020
- ISO 14025
- ISO 21930
- EN 15804
- Other:

PCR/Standard Used for Development



This declaration is an EPD in accordance with ISO 14025:2006¹ and ISO 21930:2017². The PCR is *Product Category Rules for Asphalt Mixtures*^{3,4}. This EPD transparently describes the potential environmental impacts associated with the identified life cycle stages of the described product.



EPD Submission Form

Third Party Reviewed? *

- Yes
- No

**INDEPENDENT
VERIFIERS**



John Beath Environmental, LLC

The data and declarations produced by the EPD tool was externally, independently verified in accordance with ISO14025, ISO21930, and the referenced PCR.

Trisha Montalbo

<https://goaspha.lt/3u7Mlqk>

Third Party Reviewed?
Yes / No

EPD Owner / Company *

Elam Construction

**DECLARATION
OWNER**

EPD Owner / Company

Elam Construction

Jim Doody

(970) 712-6634

None



EPD Submission Form

EPD Declared Unit Table

Material	Declared Unit (METRIC)
Asphalt	Metric Ton
Concrete	Cubic Meter
Reinforcing Steel	Metric Ton
Cement	Metric Ton

EPD Declared Unit (METRIC UNITS ONLY) *

Asphalt: Metric ton

Project Quantity in EPD Declared Unit (METRIC UNITS ONLY) *

Example -- Bid Item Quantity: 8500 SY @ 9" thickness = 2125 CY. 2125 CY * .764555 = 1625 m³

4536





EPD Submission Form

Quantity Conversion to Metric Mass Unit (If Already in Mass unit, Conversion Factor = 1) *

For example --- Given: Project Quantity in EPD Declared Unit = 1625 m³. 1 m³ of this mix = 2.4 metric tons. 1625 m³ * 2.4 metric tons/m³ = 3900 metric tons. The user would enter 3900.

1 _____

Conversion Factor Explanation

Example Entry: 1 m³ of this mix weighs 2.4 metric tons.

Your answer _____



EPD Submission Form

TABLE 4. LIFE CYCLE IMPACT INDICATORS

ACRONYM	INDICATOR	UNIT	QUANTITY PER METRIC TONNE ASPHALT MIXTURE (PER SHORT TON ASPHALT MIXTURE)			
			MATERIALS (A1)	TRANSPORT (A2)	PRODUCTION (A3)	TOTAL (A1-A3)
GWP-100	Global warming potential, incl. biogenic CO ₂	kg CO ₂ Equiv.	40.83 (37.04)	3.14 (2.85)	17.74 (16.09)	61.70 (55.98)

Global Warming Potential (kg CO ₂ -eq) for A1 Module	Global Warming Potential (kg CO ₂ -eq) for A1 - A3 Modules *
40.83	61.70
Global Warming Potential (kg CO ₂ -eq) for A2 Module	Global Warming Potential (kg CO ₂ -eq) for A1 - A3 Modules *
3.14	61.70



EPD Submission Form

Comments (If Applicable)

Your answer

[Back](#) [Submit](#)

CDOT Environmental Product Declaration (EPD) Submission

Your response has been recorded.

[Submit another response](#)

 **Google Forms** <forms-receipts-noreply@google.com> Mon, Jun 6, 1:27 PM (1 day ago) ☆ ↶ ⋮

to me ▾

Google Forms

Thanks for filling out [CDOT Environmental Product Declaration \(EPD\) Submission](#)

Here's what was received.



Questions?



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*CDOT Pavement Design and
Documentation*

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