



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

CDOT Industry Stakeholder EPD Workshop August 16, 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	<b>G. Environmental Product Declarations (EPD's)</b>			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 <b>timing</b>			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 note 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 <sup>1</sup>	Asphalt Mixtures (HMA/SMA/WMA)	403-09210 through 403-96660
412 <sup>1</sup>	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:

- Auto-populates to identify your project's EPD bid items
- Identifies items requiring EPD - for items with quantity limits in the Protocol
- Automatic calculations of EPD materials quantities using simple item inputs
- Flags to show specific EPD requirements
- EPD Declared Unit calculator (used by Contractor for EPD data entry)





# Using the EPD Quantity Calculation Tool

## 1. INPUT SHEET Tab

Copy and paste project bid item codes, description, quantity, and units from your Bid Tabulation worksheet into corresponding columns in the *INPUT* Sheet tab.  
Contact CDOT Engineering Estimates and Market Analysis Unit to request Project Bid Tabulation spreadsheet.

Any quantity changes to bid items should be made in the *INPUT* Sheet tab.  
Bid items must be pasted in numerical order.

## 2. EPD REQUIREMENT TOOL Tab

Check *EPD REQUIREMENT TOOL* tab for itemized list of bid items eligible an EPD.  
(Special) and non-standard items will typically require further quantity inputs.  
Any items requiring further input will display "Enter Required Values" highlighted in light tan. More than one entry may be required.  
Enter the requested values into the blank cell directly to the right of each entry instruction.  
Be sure to use the correct units specified.

For any single bid item with varying dimensions, use the Supplemental Calculator tab.

Columns X, Y, Z, and AA display a "YES" an EPD is required for each material type.  
Some bid items may require separate EPD submittals for concrete and steel.  
Column A will highlight yellow when a single EPD is required. Column A will highlight pink when two EPD's are required.  
Columns AB, AC, AD, and AE display declared units for each material type.

When prompted to SEE NOTE # for any bid item, go to the Notes Tab for added directions.

- Brief instructions tab
- Paste your project bid tabs
- See EPD items on the "TOOL" tab

Item Code	Item Description	Qty	Unit
201-00000	CLEARING AND GRUBBING	1	LS
202-00000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	1	LS
202-00001	REMOVAL OF STRUCTURE	4	EACH
202-00010	REMOVAL OF TREE	10	EACH
202-00019	REMOVAL OF INLET	14	EACH
202-00021	REMOVAL OF MANHOLE	18	EACH
202-00026	REMOVAL OF SLOPE AND DITCH PAVING	8	SY
202-00031	REMOVAL OF FIRE HYDRANT	4	EACH
202-00032	REMOVAL OF VALVE	26	EACH
202-00035	REMOVAL OF PIPE	15,727	LF
202-00036	REMOVAL OF PIPE (SPECIAL)	1,572	LF
202-00037	REMOVAL OF END SECTION	3	EACH
202-00190	REMOVAL OF CONCRETE MEDIAN COVER MATERIAL	484	SY
202-00200	REMOVAL OF SIDEWALK	1,165	SY
202-00202	REMOVAL OF GUTTER	312	LF
202-00203	REMOVAL OF CURB AND GUTTER	4,015	LF
202-00210	REMOVAL OF CONCRETE PAVEMENT	175	SY
202-00220	REMOVAL OF ASPHALT MAT	21,375	SY
202-00240	REMOVAL OF ASPHALT MAT (PLANING)	5,530	SY
202-00250	REMOVAL OF PAVEMENT MARKING	11,277	SF
202-00250	REMOVAL OF PAVEMENT MARKING (TEMPORARY)	5,250	SF
202-00750	REMOVAL OF LUMINAIRE	7	EACH
202-00810	REMOVAL OF GROUND SIGN	31	EACH
202-00828	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1	LS



# Using the EPD Quantity Calculation Tool

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

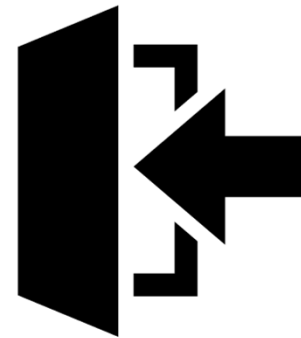
- Calculation needed if bid item is not paid in Table 2 units
- Calculations convert quantities into CY of Concrete or Pounds of Steel depending on the bid item type
- Inlet, wall, and rail items convert to concrete and steel

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	A	C	D	E	F	G	H	L	M	P	Q	S	U	W	PROJECT TOTALS			X	Y	Z			
																													CONCRETE (CY)						Steel Calculations:	Enter Value Here	Total Steel (Tons)
																													503, 504, 604, & 606 items	Class B	Class BZ						
<input type="checkbox"/>		403-34741	HOT MIX ASPHALT (GRADING SX) (75) (PG 64-22)	2350	TON	500.0	No Added Data Required																														
<input type="checkbox"/>		403-34801	HOT MIX ASPHALT (GRADING SX) (100)	2248	TON	500.0	No Added Data Required																														
<input type="checkbox"/>		412-00900	CONCRETE PAVEMENT (9 INCH)	12878	SY	1000.0	Enter Required Values	Enter Concrete Thickness (in):	9	3219.50																											
<input type="checkbox"/>		412-00901	CONCRETE PAVEMENT (9 INCH) (SPECIAL)	382	SY	1000.0	Enter Required Values	Enter Concrete Thickness (in):	9	95.50																											
<input type="checkbox"/>		412-00920	CONCRETE PAVEMENT (9 INCH) (FAST TRACK)	420	SY	1000.0	Enter Required Values	Enter Concrete Thickness (in):	9	105.00																											
<input type="checkbox"/>		503-00018	DRILLED SHAFT (18 INCH)	20	LF	x	Enter Required Values			1.31																											
<input type="checkbox"/>		503-00036	DRILLED SHAFT (36 INCH)	19	LF	x	Enter Required Values			4.97																											
<input type="checkbox"/>		503-00048	DRILLED SHAFT (48 INCH)	21	LF	x	Enter Required Values			9.77																											
<input type="checkbox"/>		601-03050	CONCRETE CLASS D (WALL)	14	CY	50.0	No Added Data Required			14.00																											
<input type="checkbox"/>		602-00020	REINFORCING STEEL (EPOXY COATED)	1030	LB	15000.0	No Added Data Required																														
<input type="checkbox"/>		604-00305	INLET TYPE C (5 FOOT)	6	EACH	x	Enter Required Values	Enter Height (LF):	5	9.62																											



# EPD Data Entry Form

- [Overview of EPD Webpage](#)
- [Overview of the Google Form for project EPD submission.](#)





# CDOT EPD Webpage

The screenshot shows a Google search interface. The search bar contains the text "cdot epd". Below the search bar, there are navigation options: "All", "News", "Images", "Videos", "Maps", "More", and "Tools". The search results indicate "About 7,780 results (0.30 seconds)". The first result is highlighted with a red box and contains the following text:

[https://www.codot.gov > materials-and-geotechnical > e...](https://www.codot.gov/materials-and-geotechnical/e...)

### Environmental Product Declarations (EPD)

Jun 8, 2022 – EPD Specification - Revision of Sections 101 and 106 –Environmental Product ...  
Form for **CDOT EPD** distribution list registration ...



## Environmental Product Declarations (EPD)

Contact Us

[CDOT\\_EPD@state.co.us](mailto:CDOT_EPD@state.co.us)

### Requirements

- [EPD Specification](#) - Revision of Sections 101 and 106 -Environmental Product Declarations.
- [EPD Protocol Document](#) - Appendix O of the 2023 Field Materials Manual.
- [EPD Quantity Conversion Spreadsheet](#) - This Tool can be used by project personnel to determine the materials eligible for EPD submissions based on bid item number and quantity. It also reports the bid item quantity in the EPD Declared Unit, which is a required value in the EPD submission form.

EPD Declared Unit Requirements Table

Material	Declared Unit (Metric)
Asphalt	Metric ton
Concrete	Cubic meter
Reinforcing Steel	Metric ton
Cement	Metric ton



## EPD Submission Form

- [EPD Submission Form](#)
  - [EPD Submission Form Introduction video](#)
- Submission Form Training
  - Asphalt Mixtures
    - [Training Video](#)
    - [Submission Example PDF](#)
    - [Annotated EPD Example PDF](#)
  - Concrete Mixtures
    - [Training Video](#)
    - [Submission Example PDF](#)
    - [Annotated EPD Example PDF](#)
  - Reinforcing Steel
    - [Training Video](#)
    - [Submission Example PDF](#)
    - [Annotated EPD Example PDF](#)
  - Cement
    - [Training Video](#)
    - [Submission Example PDF](#)
    - [Annotated EPD Example PDF](#)



## Resources

- [House Bill 21-1303 text](#)
- [Form for website feedback / additional resource requests](#)
- [Form for CDOT EPD distribution list registration](#)
- Product Category Rules (PCR) and Program Operators
  - Asphalt Mixtures
    - [NAPA EPD Program Operator website and EPD Tool](#)
    - [NAPA Asphalt mixture PCR](#)
  - Concrete Mixtures
    - [NRMCA EPD Program Operator website](#)
    - [NSF Concrete mixture PCR](#)
  - Reinforcing Steel
    - [Concrete Reinforcing Steel Institute \(CRSI\) EPD website](#)
    - [UL Steel PCR](#)
  - Cement
    - [NSF Cement PCR](#)





- **Presentations and Workshops**

- CDOT's Internal EPD Workshop held on June 8, 2022
  - [Workshop Slide Presentations](#)
  - [Workshop Recording](#)

- **Conference Agendas**

- [Preconstruction Conference Agenda \(in Portrait orientation\)](#)
- [Preconstruction Conference Agenda \(in Landscape orientation\)](#)
- [Hot-Mix Asphalt Pre-Paving and PC/QA Conference Agenda](#)
- [Concrete Pavement Pre-Paving and QC/QA Conference Agenda](#)

- **Construction Bulletin 2022-3 - [Environmental Product Declarations \(EPDs\)](#)**




## 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

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## 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](mailto:CDOT_EP@state.co.us) if you have any questions or special accommodation needs.

[hailey.goodale@state.co.us](mailto: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.

\* Required [Form](#)

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

<p><b>Material Supplier Name *</b></p> <p>Elam Construction</p>	<p><b>Material Supplier County (Mobile Plants Only)</b></p> <p>Your answer _____</p>
<p><b>Material Supplier Address *</b></p> <p>2353 River Rd</p>	<p><b>Producing Mill for Steel (If Applicable)</b></p> <p>Your answer _____</p>
<p><b>Material Supplier City *</b></p> <p>Grand Junction</p>	<p><b>Producing Mill for Steel Location (If Applicable)</b></p> <p>Your answer _____</p>
<p><b>Material Supplier State *</b></p> <p>Colorado</p>	



**Material Supplier Name** → **Company Information**

**Elam Construction** is an asphalt mixture producer.

**Roland Hot Plant** asphalt plant

2353 River Road ← **Material Supplier Address**

Grand Junction, CO 81505

USA



# 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

Type of EPD

EPD Type \*

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

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

EPD Publication Date

Software version: 2.0.0

EPD Expiration Date

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 14025:2006<sup>1</sup> and ISO 21930:2017<sup>2</sup>. The PCR is *Product Category Rules for Asphalt Mixtures*<sup>3,4</sup>. 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 m^3

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 m<sup>3</sup>. 1 m<sup>3</sup> of this mix = 2.4 metric tons. 1625 m<sup>3</sup> \* 2.4 metric tons/m<sup>3</sup> = 3900 metric tons. The user would enter 3900.

1 \_\_\_\_\_

## Conversion Factor Explanation

Example Entry: 1 m<sup>3</sup> 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 <sub>2</sub>	kg CO <sub>2</sub> Equiv.	40.83 (37.04)	3.14 (2.85)	17.74 (16.09)	61.70 (55.98)

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



# EPD Submission Form

Comments (If Applicable)

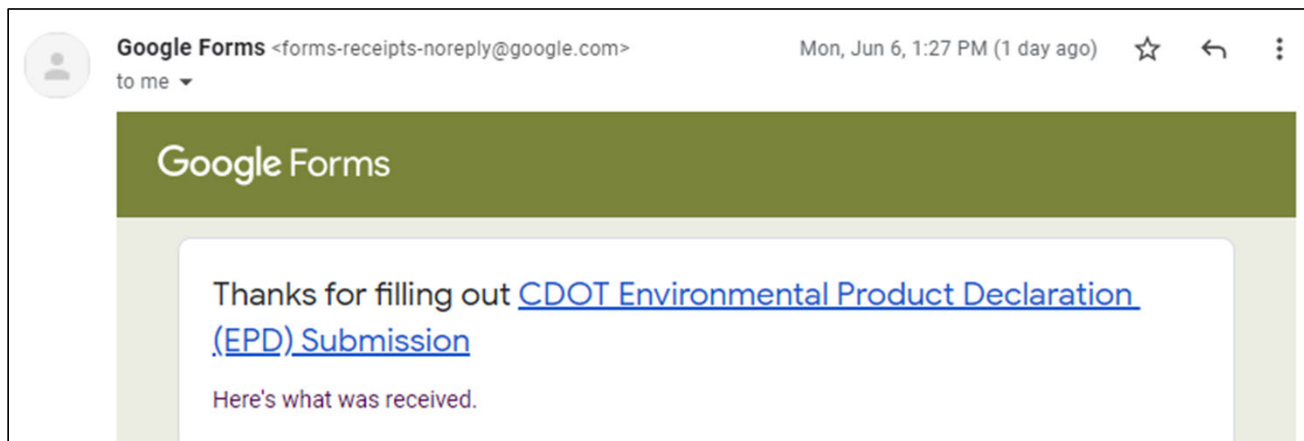
Your answer

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

CDOT Environmental Product Declaration (EPD) Submission

Your response has been recorded.

[Submit another response](#)





## Questions?



Hailey Goodale  
*CDOT Pavement Design and  
Documentation*

[Hailey.Goodale@state.co.us](mailto:Hailey.Goodale@state.co.us)  
720-591-8751

Bill Schiebel  
*RockSol Consulting Group, Inc.*

[schiebel@rocksol.com](mailto:schiebel@rocksol.com)  
303-829-9491