



COLORADO

Department of Transportation

CDOT Buy Clean Implementation

IRF Global R2T Conference - November 15, 2023

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Buy Clean Colorado - Summary

- [HB 21-1303](#), or “Buy Clean Colorado”, was incorporated into Colorado Revised Statutes 24-91-117/118 in July of 2021.
 - Section 117: Office of the State Architect (OSA)
 - Section 118: Department of Transportation (CDOT)
- Section 118 requires CDOT to begin collecting Environmental Product Declarations (EPDs) on eligible materials to include:
 - Asphalt and Asphalt Mixtures
 - Cement and Concrete Mixtures
 - Steel
- Legislation requirement to “strive to achieve a continuous reduction of greenhouse gas (GHG) emissions over time.”



Buy Clean Colorado - CDOT Key Dates

July 2022

EPD Collection

Winning bidder required to submit EPDs for eligible materials on public projects

July 2025

EPD Requirements

Winning bidder to submit EPDs for eligible materials as established by policy

January 2027

Review & Adjust Policy

CDOT to review and adjust policy every 4 years **

January 2025

Policy Creation

CDOT is to establish policy setting maximum allowable Global Warming Potential

2026

Reporting

CDOT to begin reporting GHG reduction progress to legislature

** Once established, the Policy cannot be adjusted to be less stringent for any material.



Buy Clean Colorado - Key Team Members

- CDOT
 - Deputy Chief Engineer
 - Legislative Liaison
 - State Materials Engineer
 - HQ Pavement Design Engineer
- Consultant & Subject Matter Expert
- FHWA Colorado Division
- Academia / Research
 - University of Colorado - Boulder





Analyses Process Overview

- Eligible CDOT Bid Items
- Five Eligible Materials Analysis
- Program Level 95th Percentile Item Expenditure Analysis
- Project Level Expenditure Analysis
- Focus EPD Bid Item Collection Items

Focus Bid Items



Buy Clean Colorado - Focus Bid Items

Focus Bid Items were:

- Item 206 - Structure Backfill
- Item 403 - Hot Mix / Stone Matrix Asphalt
- Item 411 - Asphalt Binder
- Item 412 - Portland Cement Concrete Pavement
- Item 503 - Drilled Shafts
- Item 504 - Retaining Walls
- Item 601 - Structural Concrete
- Item 602 - Reinforcing Steel
- Item 603 - Culverts / Pipes / Box Culverts
- Item 604 - Inlets / Manholes
- Item 606 - Guardrail
- Item 609 - Curb & Gutter/Sidewalk
- Item 618 - Precast / Prestressed Structure Elements

Added Items include:

- Item 310 - Hydraulic Cement
- Item 608 - Sidewalk and Bikeway
- Item 610 - Median Cover Material



Process Overview - Quantity & Cost Limits

Goals:

- Determine if small quantity exemptions or minimum project material cost limit could be implemented

Motivation:

- Limit undue burden on project staff, small suppliers, & contractors

Results:

- Quantity/cost limits determined for items with a typical associated item cost estimates between \$25K and \$50K
- \$3M project bid item cost implemented for initial implementation. It is anticipated this may be reduced in the future with industry growth and maturity of the program



Process Overview - Specifics

Industry Readiness :

- Focused on materials ready to submit EPDs in Year 1 (July 2022)
 - Concrete, asphalt, and reinforcing steel
- Requiring additional materials in Year 2 (July 2023)
 - Precast and prestressed products and structural steel

Submission Timing and Benchmarking:

- 2 weeks prior to material placement
- Strongly requesting facility- and supply chain-specific data

Stakeholder Collaboration:

- Hosted workshops & feedback meetings with all stakeholders
- Active involvement in multiple PCR committees



Status of EPD Collection - Documents

CDOT's EPD [Specification](#) and [Protocol](#) document were published on July 1st, 2022. Revisions to the Protocol were made for Year 2 and were published on July 1, 2023.

Instructions for use on CDOT construction projects:

Use this Standard Special Provision on all CDOT Engineering projects with an Engineers Estimate of \$3 million or greater, not including CE, Indirect, and Force Account item costs. This specification is not intended for use on Local Agency Construction projects.

Table 2. Bid Item Quantity Limits

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 1. Bid Items Requiring EPD Submittal

Item Number Category	Item Description	Included Item Number / Range	Interpretation
206	Structure Backfill (Flow-Fill)	206-00065	EPD submittal required for the flow-fill (concrete) design.
310	Hydraulic Cement	310-00900	EPD submittal required for the cement.
403 ¹	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.
412 ¹	Portland Cement Concrete Pavement	412-00200 through 412-01500; 412-06000;	Separate EPD submittals for concrete, dowel bar, and reinforcing steel items are required. For portable Plant EPD



Status of EPD Collection - Training & Support

Training and support:

- Resources and support email address posted to [CDOT EPD webpage](#) (CDOT_EPD@STATE.CO.US)
- Publication of [white paper](#) on EPD implementation process
- Video tutorials demonstrating example EPD submissions for each material
- Annotated EPDs showing the location of required information for each material
- Recordings and PDFs of workshops we've conducted to date
- A [spreadsheet tool](#) to assist project staff and contractors in determining when and how many EPDs are required per project based on bid items and quantities
- Team attendance at pre-bid, pre-construction, and pre-pave conferences for eligible projects to offer EPD guidance



Status of EPD Collection - Summary

- So far, 60+ projects have been advertised that contain the EPD Specification and are eligible for EPD collection
- Have received 62 EPDs received so far and expecting more submissions soon





Next Steps - Collaboration & FHWA Climate Challenge & EDC-7

CDOT was granted \$312,000 & intends to use on the following projects:

- Project 1:** Continued support for compliance with HB 21-1303 (ongoing industry outreach, improvements to EPDs and PCRs)
- Project 2:** Data analyses and benchmarking methodology recommendation to establish GWP limits based on EPD data we collect between now and 2025 (how to categorize materials, how to identify outliers and handle uncertainty, and developing documentation of this process) - In collaboration with CU Boulder
- Project 3:** Beyond A1-A3 (gaining familiarity with lifecycle thinking and the LCA Pave tool)



Next Steps - Challenges & Opportunities

- **Communication Gaps**
 - Non-members & unaware project staff
- **Burden on Small Suppliers**
- **Timing**
 - EPD development takes time
 - Changes to mix designs, batch plant locations, sources, etc.
- **Limited Personnel**
 - CDOT & project staff
 - Need to establish project roles and responsibilities
- **Database**
 - Simplification
- **Verification & Accuracy**
 - Current reporting
 - Industry averages
 - Necessary data - As-built quantities
- **Lack of Knowledge / Unknowns**
 - Material costs
 - Improvements to data, tools, etc.
 - Policy alignment
 - Lack of data collected before policy must be established



Questions?



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