



Portland Limestone Cement

2022 Number 2, Page 1 of 2

Date: August 23, 2024

Portland Limestone Cement

Every cement supplier will be ceasing production of ASTM C150 Type I/II cements this year and replacing them with ASTM C595 Type IL cements. This is part of the cement industries push for carbon neutrality.

CDOT has been using Type IL cements since 2006 in our pavements, but the ready mixed side has not due to building codes and architects unwilling to update their specifications. Due to recent changes in the building codes, the architects are being forced to update their specifications

Subsection 601.05 states (in part):

“The Contractor shall submit a new Concrete Mix Design Report meeting the above requirements when a change occurs in the source, type, or proportions of cement, slag cement, fly ash, high-reactivity pozzolan, silica fume, or aggregate.”

This will affect CDOT projects once the ready mixed concrete supplier can no longer obtain Type I/II cement and will be required to use Type IL cement. Per CDOT specifications, a change in cement source or type requires a new mix design which takes a minimum of 28-days plus for review. The cost of a typical trial mix is \$5,000-\$9,000.

Type IL cement and Type I/II cement are very similar. Type I/II cement is a clinker that is ground with up to 5% limestone and represents about 3-4% in the Colorado market. Type IL cement uses the same clinker but is ground with 5-15% limestone. The Type IL cements in Colorado typically have 10-12% limestone. The cement companies determined how much limestone to use based on performance. These companies have determined that the Type IL cements with 10-12% limestone perform similarly to the existing Type I/II cements in workability, strength gain and ultimate strength.

CDOT Materials has met with industry representatives and have approved the following transition plan through the Materials Advisory Committee, to minimize the impact on projects statewide:

1. All Concrete mix designs on the CDOT Approved products list set to expire in 2022 will be extended to December 31, 2022, if they are using an ASTM C150 cement.
2. ASTM C595 Type IL cement from the same source can be swapped pound-for-pound with ASTM C150 cements on approved mixes provided the following conditions are met:



COLORADO
Department of Transportation
Division of Project Support
Contracts and Market Analysis Branch
Area Engineers

CONSTRUCTION BULLETIN

Portland Limestone Cement

2022 Number 2, Page 2 of 2

Date: August 23, 2024

- If the mix design aggregate has been determined to be alkali-silica reactive (ASR) through ASTM C1260 (a mix design requirement) then the ASR mitigative measures with the new Type IL cement must be tested and pass per ASTM C1567.
 - The sulfate resistance requirements in Subsection 601.04 have been met for the sulfate resistance class on your Project.
3. Concrete mix designs that make a change to Type IL cement will expire at their natural expiration date after December 31, 2022.
 4. Concrete mix designs expiring after December 31, 2022, will require a new mix design upon expiring if they have not already changed over to Type IL cement.

If a Contractor needs to make the mix change involving Type I/II and IL cement, the PE/PM should contact the Concrete & Physical properties lab at dot_concretemixdesigns@state.co.us to have your existing mix design(s) reviewed and re-issued with the new cement type.

On Projects with concrete pavement, a new process for strength will be created when the change is made.

Any additional questions can be addressed by Staff Materials Lab or Region Materials Engineer.

References:

Please print a copy of this bulletin and keep it with your copy of the *Construction Manual*.

The *Construction Manual* and Construction Bulletins can be found on the Design and Construction Project Support web page at:

https://www.codot.gov/business/designsupport/bulletins_manuals.