

MATERIAL STANDARDS

200.00 CAST-IN-PLACE CONCRETE

201.0 INTRODUCTION

The primary objective of these concrete materials and testing standards is to provide high quality and long lasting infrastructure for the City of Champaign. These regulations are intended to maximize service life and minimize maintenance costs for all newly installed concrete infrastructure constructed under City jurisdiction.

202.0 CONSISTENCY OF TESTING

Uniform testing requirements will apply to all Portland Cement Concrete delivered to job sites regardless of the source of the concrete product, that is, central-mix plants or truck-mixed. Further standards are defined by City contract specifications and plans, and by the standards set forth in the City Manual of Practice.

202.1 INSPECTOR REQUIREMENTS

The requirements for inspectors are outlined in section 7.01 of Manual of Practice Chapter 7. All inspectors shall be certified by IDOT to have passed the IDOT Level 1 PCC Inspection Training Course. Inspectors are required to test the concrete as per the most recent IDOT specifications and procedure manuals. Any inspector performing testing shall be trained in the appropriate ASTM testing standard. Contractors and/or developers will be required to facilitate proper testing techniques by providing an adequate number of capable inspectors to match the pace of concrete placement, and cooperating with the inspectors to enable proper testing. The requirements of section 210.1 apply to City contracted work and work by private developers.

202.2 FREQUENCY OF TESTING

Tests will be taken at the intervals prescribed by IDOT. If a test fails, the next load will be tested, even if it was not on the schedule to be tested, and testing will continue on every load until the problem is corrected.

202.3 WHEN TESTS ARE TAKEN DURING THE POUR

Samples for tests shall not be taken from the first or last 0.1 cubic meter of material. It is not required for the test to come from the middle third of the load. Test procedures are outlined in Illinois Modified AASHTO T141-Sampling Fresh Concrete, IDOT Manual of Test Procedures for Materials.

202.4 ACCURACY OF AIR METERS

IDOT requires calibration adequate to insure that the meters are performing properly. If the material supplier, contractor or the City has reason to believe that an air meter is out of calibration, it shall be removed from use until it can be recalibrated or its calibration verified. This removal does not eliminate the requirement to perform air tests. If the contractor or material supplier requests recalibration or calibration verification, said contractor or material supplier shall provide for a certified air meter for the retest.

202.5 SAMPLING AND TESTING AT THE PLANT

The City requires that sampling and material testing be performed at the plant in accordance with the IDOT Manual of Test Procedures for Materials.

202.6 DELIVERY TRUCKS

All delivery trucks shall be in accordance with article 1020 of the Standard Specifications for Road and Bridge Construction. Delivery trucks transporting truck-mixed concrete shall have functional drum counters, which are reset or have starting point recorded with each new load. Failure to have a functional counter is cause for rejecting the load. Concrete shall not be placed unless it has received specified mixing.

203.0 QUALITY OF PRODUCT DELIVERED TO THE SITE

Concrete shall be delivered to the site in a consistent form and high quality condition as per the IDOT Standard Specifications for Road and Bridge Construction unless otherwise noted. Repeated and numerous occurrences of concrete being delivered to the site that is outside of the required material specifications may be grounds for that supplier being not allowed to deliver any further concrete to the job site on that particular work day. The quality of the concrete that arrives at the jobsite will be measured as follows:

203.1 UNIFORMITY OF THE CONCRETE MIX

Unmixed concrete, known as dough balls, is not allowed to be present in trucks delivered to jobsites. The tolerance for the presence of dough balls in concrete delivered to City job sites is limited to one (1) occurrence in the "first wheel barrow" (defined as approximately the first ¼ cubic yard) of concrete delivered from the first truck of the day. Any additional occurrences of unmixed concrete (dough balls) may be grounds for rejection of that particular truckload of concrete.

203.2 AIR CONTENT

Air content shall conform to the requirements of the 2002 IDOT Standard Specification 1020.04, Table 1 for the class of concrete being produced. Generally, the range is 5% to 8% except for PCC pavement patching and railroad crossings, where the range is 4% to 7%. If the air content test result is below the specified range, air entrainment agent shall be added, additional mixing action shall be provided, and a retest shall be performed. If it passes the retest, it may be used, if not, it shall be rejected. If the air content is 1% or less above specification and there is still available time on the mix, the truck may be set aside within specified time and revolution limits and retested. If the air content is more than 1% above the specified range, the load of concrete material will be rejected. The contractor shall identify and provide receipt for the disposition site. Also, if the air is less than minimum (typically 4%), the contractor shall have a maximum of two (2) attempts to correct the air. If the air content is not corrected after the 2nd retest, the truck will be rejected.

203.3 SLUMP

Slump shall conform to the requirements of the 2002 IDOT Standard Specification 1020.04, Table 1 for the class of concrete being produced. Attempts to correct out of specification slumps may be made per IDOT standards. No water may be added at the job site, slump may be increased by adding super plasticizer. Note: IDOT has set a limit on water/cement ratio, and water can be added at the site if the delivery tickets include the additional volume of water that can be added without exceeding the water/cement ratio limit.

203.4 STRENGTH

Per Industry Standards. Care shall be taken to prepare and store cylinders per ASTM standards.