

**Structural Concrete
Standardized Sample
Number Lot Number
System Instructions**

May 2011

I. Concrete Sample Number / Lot Number System and Report

The State Materials Office has developed a statewide concrete sample and lot numbering system for use on all projects with structural concrete. The numbering system is now required to be used on all contracts let beginning in July 2010. Instructions for the numbering system and an example reports are included in this document.

Specifications Section 346 defines a lot by mix design. Structural concrete samples and lots are tracked by each mix design.

The use of the concrete sample and lot numbering system and the report will provide Construction and Materials personnel with the ability to track the status of concrete sampling and testing and assist in identifying Materials Certification issues. The report, entitled Sample Number - Lot Number Report is embedded in the Laboratory Information Management System (LIMS) and can be used on any project, whether or not the standardized numbering system has been used on the project. The report will be most helpful on projects that utilize the numbering system, but can still provide valuable tracking information on projects where an alternate system has been used.

If you have any questions regarding the numbering system or the report, please contact Donald Bagwell in the State Materials Office at (352) 955-6645 or Susan Blazo in the State Materials Office at (352) 955-6669

II. Standardized Numbering System Usage Notes

- A. Project Specific Alternate Numbering Systems – The standardized numbering system will work for the majority of projects, both small and large. In rare cases, such as extremely large or complex projects where there are multiple on-going placements of the same mix design, the system may not work. For these projects, the project personnel may develop a project specific alternate system. Project personnel must contact the appropriate District Materials Office Materials Certification personnel to obtain approval for a project specific alternate numbering system before concrete placement begins. For full-Federal Oversight projects, contact the State Materials Office Certification Specialist. Do not use an alternative numbering system without prior approval from the appropriate Materials Office.
- B. District Specific Alternate Numbering Systems – Some District Materials Offices may choose to revise the standardized numbering system to address district specific items. Alterations for district specific items are permitted as long as the alternate system is clearly defined and implemented before concrete placement begins and is used throughout the project. Alternate district numbering systems must take into account the grouping and sorting criteria on the Sample Number / Lot Number report.
- C. Mix Design Adjustments – Adjustments to mix design numbers already assigned in LIMS will be coordinated between the District Materials Office and the State Materials Office. For example, a mix design originally submitted with a mix design number of 02-0999 may get adjusted for slip form operations. A new mix design number of 02-0999SF would be assigned to the adjusted mix design. Project personnel will number samples and lots under each mix design number since both mix designs numbers may be used at the same time.

III. Structural Concrete Sample / Lot Number Instructions

Follow format and numbering sequences as described below:

- A. QC samples:
 1. Start the sample number **for each mix design** with sample number 0001 and Lot number 1. Do not drop any of the zeros as this will cause report sorting issues if QC and V do not have the same number of zeros.
 2. Continue with sequential sample and lot numbers as long as the same mix design is used.
 3. Restart with sample number 0001 and lot number 1 when a new mix design number is introduced on the project.
 4. If you go back to a mix design number previously used on the project, pick up the sample number where you left off. Do not start over with 0001 because there will be duplicated sample numbers on the same mix design.
 5. You may repeat sample numbers across different mix designs. For example, if you are using more than one Class IV concrete mix design numbers, you will have a sample numbered CC400001Q under each mix design. But, you should not have CC40001Q more than once under a particular mix design.
 6. For a higher strength mix design used in lieu of a lower strength mix design, number the samples according to the mix design. There are a couple of ways you might see this on a project:
 - a. If the same load of Class IV is used as both Class IV and in lieu of a Class II (Bridge Deck), track and number one sample for the mix design as Class IV beginning with CC40001Q. Show the sample quantity represented as the entire amount delivered. Make a note in the Notepad that part of the load was used as Class II (Bridge Deck), including the approximate quantity that was used for Class IV and the approximate quantity that was used for Class II (Bridge Deck).
 - b. If an entire load of Class IV mix design is used on a project in lieu of a Class II (Bridge Deck), track and number the sample for the mix design as Class IV beginning with CC40001Q. Show the sample quantity represented as the entire amount delivered. Make a note in the Notepad that the load was used as Class II (Bridge Deck).
 7. Show the quantity represented as the amount of cubic yards the QC sample represents, for example, 18 CY.

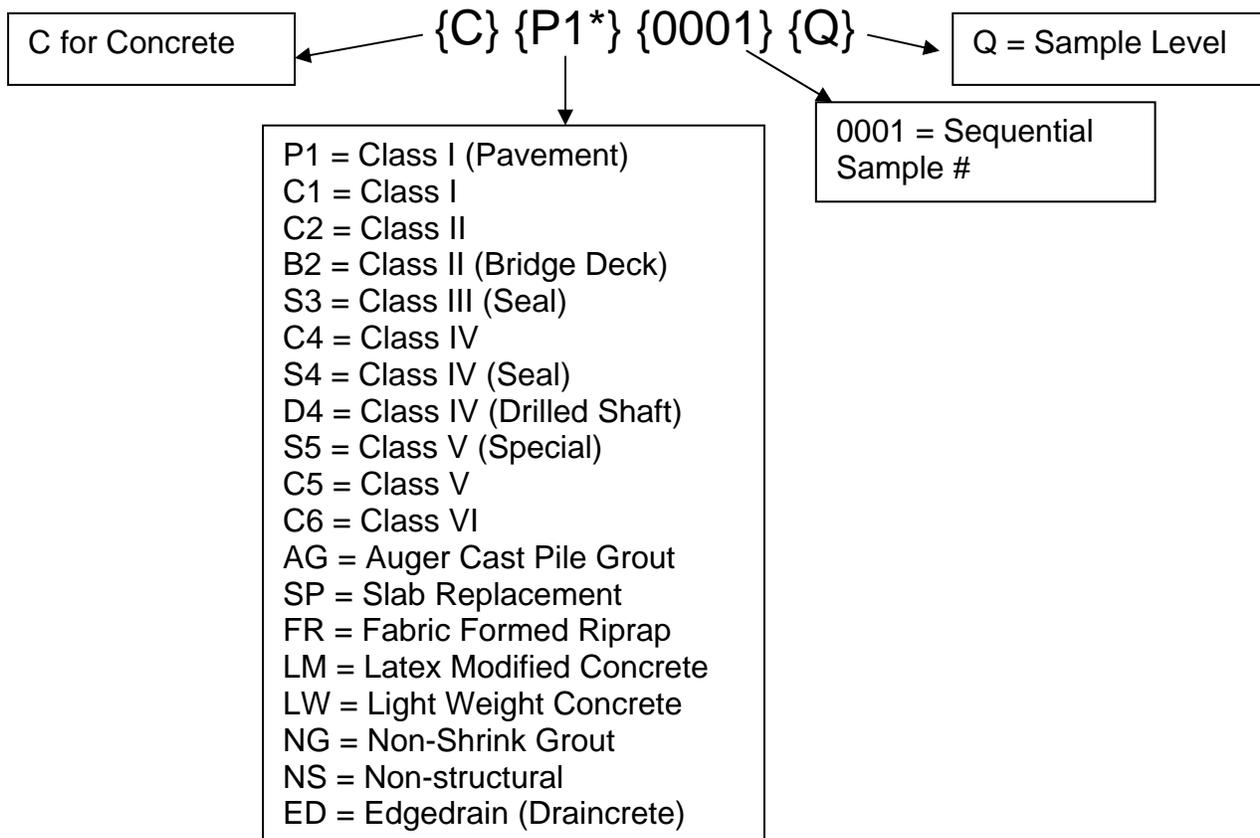
- B. Verification samples:
1. Match the Verification sample number to the corresponding QC sample number. For example if the QC sample number is CC30003Q, the Verification sample number would be CC30003V. Remember to include all leading zeros so that QC and V samples are sorted correctly on the Sample Number / Lot Number report.
 2. Identify the Lot number as all the QC lots the Verification sample corresponds to. For example, if the Verification sample corresponds to QC lots 9, 10, 11, and 12, the Verification lot number is 9-12. The lot numbers should be consecutive. Refer to the LIMS structural concrete tutorials for specific instructions for identifying the lot number field for V samples in LIMS.
- C. Resolution samples – Resolution samples are verification samples (Sample Level V) with the Resolution Flag in LIMS changed to Y for YES. Because the sample number may represent the Q cylinder, the V cylinder or both, use the same number as would be used for the representative Q or V sample with an R at the end.
1. If the resolution sample represented the Q cylinder from CC30001Q, the resolution sample number would be CC30001QR.
 2. If it represented the V cylinder from CD40007V, the resolution sample number would be CD40007VR.
 3. If the District Materials Office requires both cylinders to be logged on one sample, the same example would be CD40007R (no Q or V in the sample number because both cylinders are represented by the same Resolution sample).
- D. Independent Verification samples:
1. Project personnel should be prepared to take an independent verification sample at any time. Reasons for the use of Independent verification may be questions or issues concerning the quality of the mix, such as slump or compressive strength.
 2. Match the IV sample number to the corresponding QC sample number only. For example, if you take the IV sample in conjunction with QC sample CS30002Q, the IV sample would be CS30002IV.
 3. Identify the Lot number as the QC lot the IV sample corresponds to. For example, if the IV sample corresponds to QC lot 5, the lot number would be 5.
 4. Show the quantity represented as the amount of cubic yards the QC sample represents, for example, 50 CY.

- E. Prestressed Samples – Depending on the District Materials Office practice for numbering prestressed samples, project personnel may or may not see concrete samples logged into LIMS under a specific Financial Project Id. It is FDOT standard practice to log prestressed samples under the district specific overhead project id, not the specific Financial Project Id. If you have questions about how prestressed samples are logged into LIMS, contact the appropriate District Materials Office prestressed QC Program Coordinator.

- F. Multiple Projects on the Same Contract – QC and V personnel should consult with the District Materials Office Project Certification personnel and agree on one of the following methods before concrete placement begins. One method must be used throughout the life of the contract.
 - 1. Number samples and lots for each project separately
 - 2. Number samples and lots on the lead Financial Project Id only

- G. Multiple Plants with the Same Mix Design on one Project – QC and V personnel consult with the District Materials Office Project Certification personnel and should agree on one of the following methods before concrete placement begins. One method must be used throughout the life of the contract.
 - 1. Number samples and lots and track concrete placement for the mix design, regardless of plant number.
 - 2. The preferred method is to number samples and lots and track concrete placement per plant. If this is the method used, revise the sample numbers for the first plant so that the first character is a "1", for example, instead of CS30001Q, use 1S30001Q. The sample number for the second plant would be 2S30001Q. Each additional plant would be represented by the next letter or number. Use only one of these systems throughout the life of the contract so that the report will sort each plant's series of samples together. An example of this system is included on page 12.

IV. Sample Number Format Example = CP10001Q



*Number the samples according to mix design. If a higher strength mix design is used in lieu of a lower strength mix design, number the samples the mix design number, regardless of the application.

V. Sample Numbering Examples

- A. CC60004Q = 4th QC sample of a Class VI mix
- B. CB20010V = Verification sample corresponding to 10th QC sample CB20010Q of a Class II (Bridge Deck) mix design

VI. Sample Numbering Sequences – Major Classes of Concrete

CLASS OR TYPE OF CONCRETE	NUMBERING SEQUENCE
CLASS I (PAVEMENT)	CP10001Q THRU CP19999Q
CLASS I	CC10001Q THRU CC19999Q
CLASS II	CC20001Q THRU CC29999Q
CLASS II (BRIDGE DECK)	CB20001Q THRU CB29999Q
CLASS III	CC30001Q THRU CC39999Q
CLASS III (SEAL)	CS30001Q THRU CS39999Q
CLASS IV	CC40001Q THRU CC49999Q
CLASS IV (DRILLED SHAFT)	CD40001Q THRU CD49999Q
CLASS V (SPECIAL)	CS50001Q THRU CS59999Q
CLASS V	CC50001Q THRU CC59999Q
CLASS VI	CC60001Q THRU CC69999Q
NOTE: Samples from Precast/Prestressed – Class of Concrete may begin with the alpha character “P” or “B”.	

VII. Sample Numbering Sequences – Miscellaneous Concrete Items

NOTE: Not all the applications below require a mix design number at login. For those materials, the Concrete Sample Login screen cannot be used to log the samples into LIMS. The table below shows suggestions for numbering these materials as a standard for tracking.

CLASS OR TYPE OF CONCRETE	NUMBERING SEQUENCE
AUGER CAST PILE GROUT	CAG0001 THRU CAG9999
CONCRETE SLAB REPLACEMENT	CSP0001 THRU CSP9999
FABRIC FORMED RIPRAP	CFR0001 THRU CFR9999
LATEX MODIFIED PC CONCRETE	CLM0001 THRU CLM9999
LIGHT WEIGHT CONCRETE	CLW0001 THRU CLW9999
NON-SHRINK GROUT	CNG0001 THRU CNG9999
NON-STRUCTURAL	CNS0001 THRU CNS9999
EDGEDRAIN (DRAINCRETE)	CED0001 THRU CED9999

VIII. Sample No. – Lot No. Report

- A. Run the Sample No. - Lot No. Report to track samples and material status for structural concrete material ids.
- B. It is recommended to run the report prior to each placement or as deemed appropriate. If you have maintained spreadsheets in the past to track concrete use, you should be able to substitute this report for the tracking system spreadsheets. Generate it as often as needed to ensure the concrete placement is up to date. Some examples of how often you might want to run it are:
 - 1. Monthly on smaller projects
 - 2. Weekly on larger, more complex projects
 - 3. As requested by Materials Office Certification personnel to verify concrete tracking issues or concerns such as missing or duplicate sample numbers
- C. The report will show if:
 - 1. QC Samples are verified/not verified by design mix number
 - 2. Samples are not tested
 - 3. Samples are not entered in LIMS
 - 4. If all lots are accounted for
 - 5. Duplicate sample numbers under the same design mix number

IX. Sample No. – Lot No. Report Example

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of Transportation

Sample Number - Lot Number Report

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Lot Number	Sample No	Sample Level	Plant Number	Sample ID	Date Sampled	Date Tested	Verified?	Quantity Represented
Design Mix No. 04-0900			Class: <u>Class IV</u>					
Project: 19585015201								
160F								
1	CC40001Q	Q	01-002	0700051187	8/1/07	8/1/07	Yes	50CY
2	CC40002Q	Q	01-002	0700051188	8/2/07	8/2/07	Yes	50CY
3	CC40003Q	Q	01-002	0700051189	8/3/07	8/3/07	Yes	50CY
4	CC40004Q	Q	01-002	0700051190	8/4/07	8/4/07	Yes	50CY
1-4	CC40004V	V	01-002	0700051191	8/4/07	8/4/07	Yes	200CY
160L								
1	CC40001Q	Q	01-002	0700051192	8/1/07	8/29/07	Yes	50CY
2	CC40002Q	Q	01-002	0700051193	8/2/07	8/30/07	Yes	50CY
3	CC40003Q	Q	01-002	0700051194	8/3/07	8/31/07	Yes	50CY
4	CC40004Q	Q	01-002	0700051195	8/4/07	9/1/07	Yes	50CY
1-4	CC40004V	V	01-002	0700051196	8/4/07	9/1/07	Yes	200CY
Design Mix No. 07-0544			Class: <u>Class II DECK</u>					
Project: 19585015201								
160F								
1	CB20001Q	Q	01-002	0700051197	8/13/07	8/13/07	Yes	50CY
2	CB20002Q	Q	01-002	0700051198	8/14/07	8/14/07	Yes	50CY
3	CB20003Q	Q	01-002	0700051199	8/15/07	8/15/07	Yes	50CY
4	CB20004Q	Q	01-002	0700051200	8/16/07	8/16/07	Yes	18CY
1-4	CB20004V	V	01-002	0700051201	8/16/07	8/16/07	Yes	168CY
160L								
1	CB20001Q	Q	01-002	0700051202	8/13/07	9/10/07	Yes	50CY
2	CB20002Q	Q	01-002	0700051203	8/14/07	9/11/07	Yes	50CY
3	CB20003Q	Q	01-002	0700051204	8/15/07	9/12/07	Yes	50CY
4	CB20004Q	Q	01-002	0700051205	8/16/07	9/13/07	Yes	18CY
1-4	CB20004V	V	01-002	0700051206	8/16/07	9/13/07	Yes	168CY
Design Mix No. 07-0834			Class: <u>Class IV</u>					
Project: 19585015201								
160F								
1	CC40001Q	Q	01-002	0700051207	8/22/07	8/22/07	Yes	25CY
2	CC40002Q	Q	01-002	0700051208	8/23/07	8/23/07	Yes	25CY
3	CC40003IV	IV	01-002	0700051210	8/24/07	8/24/07	Yes	25CY
3	CC40003Q	Q	01-002	0700051209	8/24/07	8/24/07	Yes	25CY
160L								
1	CC40001Q	Q	01-002	0700051211	8/22/07	9/19/07		25CY
2	CC40002Q	Q	01-002	0700051212	8/23/07	9/20/07		25CY
3	CC40003IV	IV	01-002	0700051214	8/24/07	9/21/07		25CY
3	CC40003Q	Q	01-002	0700051213	8/24/07	9/21/07		25CY

Number of Rows on Report: [] 28

sample_no_lot_nov5.rpt bs/db 3/20/07

LEGEND: QC=Quality Control

Sample Levels: Q=Quality Control, V=Verification, IV=Independent Verification

X. Sample No. - Lot No. Report Example for Three Plants / One Mix Design Number

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Lot Number	Sample No	Sample Level	Plant Number	Sample ID	Date Sampled	Date Tested	Verified?	Quantity Represented
Design Mix No. 02-1303			Class: <u>IV</u>					
Project: 20973345201								
160F								
1	1C40001Q	Q	72-329	1000000182	1/12/10	1/12/10	Yes	50CY
1-4	1C40001V	V	72-329	1000000183	1/12/10	1/12/10	Yes	200CY
2	1C40002Q	Q	72-329	1000000184	1/13/10	1/13/10	Yes	50CY
3	1C40003Q	Q	72-329	1000000180	1/14/10	1/14/10	Yes	50CY
4	1C40004Q	Q	72-329	1000000181	1/15/10	1/15/10	Yes	50CY
Plant 1								
1	2C40001Q	Q	72-339	1000000188	1/12/10	1/12/10	Yes	19CY
2	2C40002Q	Q	72-339	1000000189	1/13/10	1/13/10	Yes	20CY
1-4	2C40002V	V	72-339	1000000190	1/13/10	1/13/10	Yes	63CY
3	2C40003Q	Q	72-339	1000000190	1/14/10	1/14/10	Yes	11CY
4	2C40004Q	Q	72-339	1000000191	1/15/10	1/15/10	Yes	13CY
Plant 2								
1	3C40001Q	Q	72-351	1000000200	1/12/10	1/12/10	Yes	20CY
2	3C40002Q	Q	72-351	1000000201	1/13/10	1/13/10	Yes	20CY
3	3C40003Q	Q	72-351	1000000200	1/14/10	1/14/10	Yes	20CY
1-4	3C40003V	V	72-351	1000000202	1/14/10	1/14/10	Yes	75CY
4	3C40004Q	Q	72-351	1000000201	1/15/10	1/15/10	Yes	15CY
Plant 3								
160L								
1	1C40001Q	Q	72-329	1000000183	1/12/10	3/29/10	Yes	50CY
1-4	1C40001V	V	72-329	1000000187	1/12/10	3/29/10	Yes	200CY
2	1C40002Q	Q	72-329	1000000184	1/13/10	3/29/10	Yes	50CY
3	1C40003Q	Q	72-329	1000000185	1/14/10	3/29/10	Yes	50CY
4	1C40004Q	Q	72-329	1000000186	1/15/10	3/29/10	Yes	50CY
1	2C40001Q	Q	72-339	1000000193	1/12/10	3/29/10	Yes	19CY
2	2C40002Q	Q	72-339	1000000194	1/13/10	3/29/10	Yes	20CY
1-4	2C40002V	V	72-339	1000000197	1/13/10	3/29/10	Yes	63CY
3	2C40003Q	Q	72-339	1000000195	1/14/10	3/29/10	Yes	11CY
4	2C40004Q	Q	72-339	1000000196	1/15/10	3/29/10	Yes	13CY
1	3C40001Q	Q	72-351	1000000203	1/12/10	3/29/10	Yes	20CY
2	3C40002Q	Q	72-351	1000000204	1/13/10	3/29/10	Yes	20CY
3	3C40003Q	Q	72-351	1000000205	1/14/10	3/29/10	Yes	20CY
1-4	3C40003V	Q	72-351	1000000207	1/14/10	3/29/10	Yes	75CY
4	3C40004Q	Q	72-351	1000000206	1/15/10	3/29/10	Yes	15CY

XI. Sample Number / Lot Number Standardized System Frequently Asked Questions

Q1. Do I have to use the standardized numbering system?

A1. In most cases, yes, you must use the standardized numbering system if your contract was let after July 2010. The exceptions are district specific altered numbering systems and project specific altered numbering systems.

Q2. What are those?

A2. A district specific altered numbering system is a system developed by the District Materials Office (usually the District Materials Certification personnel) to help track samples according to specific use issues for that district, like slump loss assignments. The District Materials Office develops the variations from the standardized numbering system ahead of time and notifies the project personnel of what alterations to make to the standardized numbering system. A project specific altered numbering system is a system developed by the project personnel (QC and Verification working together) in conjunction with the appropriate Materials Office Certifications personnel to help track samples. This system requires pre-approval by the appropriate Materials Office Certifications personnel before concrete placement begins.

Q3. On my project under a mix design, there are four QC samples and a V sample, but they are not in order. Why isn't the report sorting the numbers correctly?

A3. There are a number of reasons why the report isn't sorting correctly, but the most common one is that either QC or V or both varied the sample numbers from the standardized numbering system. If both sets of samples don't have the same number of leading zeros, the sample with the least amount of zeros will get sorted first, no matter what the sample level is. The report groups by Mix Design Number, then project number (in case you generate the report for more than one project at a time) then material id. It sorts each group by FDOT Sample Number. If the standardized system is not adhered to, the sort will show any variations by not putting the samples in the expected order.

Q4. Is it okay to have duplicate sample numbers? I have two "CC20001Q" sample numbers on my project.

A4. It is okay to have the same FDOT sample numbers if they are in more than one mix design, but not under the same mix design.

- Q5. I didn't use the standardized numbering system on my project at the beginning because the project was let before July 2010. Can I still use the Sample No. – Lot No. report?
- A5. Yes, you can. The report shows you useful information on the number of samples taken and possibly missing samples if your numbering system is sequential. Even if you are on a project not using the standardized number system, you may find the Sample Number – Lot Number report helpful in tracking the status of the concrete on your project.
- Q6. I have my own concrete numbering system and I like it. Why do I have to use the standardized numbering system? Why can't I just use my own system?
- A6. District Materials, District Construction and project personnel have requested that the State Materials Office develop a standardized numbering system for concrete samples a number of reasons. By using a standardized numbering system, reports summarizing concrete samples are easier to group and sort. When reviewing data from LIMS, having a standardized system ensures that the data is sorted and grouped in a systematic manner and makes the data review easier. Many numbering systems do not take into account that samples must be tracked by mix design number, for example, numbering systems where all Class IV concrete is numbered sequentially, A40001, A40002, etc. This type of tracking system makes it difficult to determine if the frequency requirements have been met.
- Q7. So I have to follow the standardized numbering system to make other people's jobs easier?
- A7. Using a standardized system in conjunction with the Sample Number – Lot Number will make everyone's job easier. The QC manager can use it to track the status of QC samples and see in a glance if all the QC samples been entered, what the last sample number on this mix design was, if the Verification personnel have completed their data entry, and if there is a corresponding field sample for every lab sample. Verification personnel can use the report to ensure that all QC samples have corresponding Verification samples. The use of the standardized numbering system and the Sample Number- Lot Number report eliminates the need for individual spreadsheets to track project concrete sample data.

- Q8. I ran the Sample Number – Lot number report and found a mistake in my numbering. What do I do?
- A8. If the sample has been approved, you may need to contact the District LIMS Application Coordinator to have the sample rolled back so the sample number can be revised. The person responsible for approving should be checking the sample number (see the Concrete Sample Approver Guidelist in the LIMS User Manual and concrete sample tutorials) before the sample is approved to ensure the data is correct. If it is not correct, the Approver can revise the FDOT Sample Number before the sample is approved. See the LIMS concrete sample instructions for more details.
- Q9. The contractor has proposed to use a Class IV mix design in lieu of a Class II Bridge Deck. He will be using the same Class IV mix design for Class IV applications. How do I number the samples under the Class II Bridge Deck? Are they different from the samples where the contractor was placing the concrete as Class IV?
- A9. No, you don't use different sample numbers. Samples should be numbered and tracked according to the mix design. Make a note in the notepad regarding that the sample was also used for a lower strength mix (and the approximate quantities for each).