It is claimed:

1. A method for adjusting a concrete mix or mix design, comprising:

    (A) batching at least one concrete mix load using a concrete mix design, into a concrete mixer drum, and calculating for the at least one concrete mix load a delta slump value (Δ-Slump) and a delta water content value (Δ-H_2O) wherein:

        i. Δ-Slump value is calculated based on differences (e.g., subtractive differences or ratio) between a target slump value for the at least one concrete mix load and the slump value obtained for the at least one concrete mix during delivery thereof from a batch plant to a construction site; and

        ii. Δ-H_2O value is calculated based on differences (e.g., subtractive differences or ratio) between a target maximum water content for the at least one concrete mix load and the water content value as determined for the concrete mix during delivery thereof from the batch plant to a construction site;

    (B) comparing the obtained Δ-Slump and Δ-H_2O with a diagnostic delta data curve defined by at least two data points, wherein each of the at least two data points is based on at least one concrete load delivery wherein both slump and water content targets are met, and wherein at least one other data point concerns at least one concrete load delivery wherein at least one or both of the slump and water contents are not met; and

    (C) adjusting, or providing an indication of adjustment to, at least one of the following properties chosen from: slump, water content, cement content, chemical plasticizer content, aggregate content, or a combination thereof, in the at least one concrete mix load or a concrete mix design from which the at least one concrete mix load was batched, and delivering the at least one concrete mix load at a construction site after the adjustment is made to the mix load or batching at least one

concrete mix load using the adjusted concrete mix design after the adjustment is made.

2. The method of claim 1 wherein, in step (A), a plurality of concrete mix loads are batched and delivered, and, in step (B), the diagnostic delta data curve is defined by a plurality of data points from the plurality of concrete mix load deliveries wherein at least one of the data points is based on slump and water content targets being met.

3. The method of claim 1 wherein, in the adjusting step (C), the adjustment is initiated by a concrete slump monitoring system based on the concrete delivery truck or by a concrete batching system at the batch plant, wherein a system processor accesses a collection of protocols for adjusting the concrete mix or mix design based on whether one or both slump and water content targets are met and initiates at least one adjustment to the concrete mix or mix design or otherwise initiates an indication to the effect that the concrete mix or concrete mix design requires that at least one adjustment be made.

4. The method of claim 3 wherein, when a concrete mix is detected to have both Δ-Slump and Δ-H_2O greater than zero, where these delta values are calculated based on differences between target values and monitored values, a system processor initiates an indication that adjustment needs to be made to the mix design to the effect that discharge of concrete contained in the mixer drum of a concrete delivery truck should be delayed to allow for slump of the load to decrease over time.

5. The method of claim 3 wherein, when a concrete mix is detected to have both Δ-Slump and Δ-H_2O less than zero, where these delta values are calculated based on differences between target values and monitored values, a system processor initiates an adjustment to a concrete mix or mix design to the effect that more water or plasticizer is added into a concrete mix or included into a concrete mix design; or a system processor initiates an indication or adjustment that more water or chemical

plasticizer should be added into future concrete mix loads or into the concrete mix design.

6. The method of claim 3 wherein, when a concrete mix is detected to have Δ-Slump > 0 and Δ-H_2O < 0, the delta values being calculated based on differences between target values and monitored values, a system processor initiates an indication that pouring of a concrete mix load in a delivery truck mixer drum should be delayed to allow for slump of the load to decrease over time; or, alternatively, initiates an indication that an adjustment should be made in the concrete mix design, or initiates an adjustment, the adjustment being chosen from changing water content or plasticizer amount or relative proportions thereof.

7. The method of claim 3 wherein, when a concrete mix is detected to have Δ-Slump < 0 and Δ-H_2O > 0, the delta values being calculated based on differences between target values and monitored values, a system processor initiates an indication that an adjustment to the concrete mix or mix design should be made, or otherwise makes an adjustment to the concrete mix or mix design, the adjustment comprising adding chemical plasticizer, adding aggregate, adding cement, or combination thereof.

8. The method of claim 3, wherein at least three protocols are stored in memory and available for access by a system processor of a batching or slump monitoring system, the protocols comprising at least one adjustment or indication that an adjustment needs to be made to a mix or mix design, relative to where (A) both Δ-Slump and Δ-H_2O are > 0; (B) both Δ-Slump and Δ-H_2O are < 0; and (C) Δ-Slump < 0 and Δ-H_2O > 0, or Δ-Slump > 0 and Δ-H_2O < 0, wherein the delta values are calculated based on differences between target values and monitored values; and the system processor accesses and executes at least one of said protocols depending upon whether one or both Δ-Slump and Δ-H_2O are greater or equal to 0.

9. The method of claim 1 wherein Δ-Slump and Δ-H_2O is calculated for a current delivery concrete mix load based on differences between target values and monitored values, and based on a comparison with the diagnostic data curve for the

mix design, a system processor sends a warning or an indication to a concrete batch plant operator or batching system processor that the concrete mix design requires adjustment, the adjustment comprises at least one change to water content, plasticizer, cement, aggregates, or combination thereof, or to relative proportions of any of the foregoing components, whereby subsequent concrete loads batched from the mix design are determined to have an adjustment of Δ-Slump, Δ-H_2O, or both towards the state wherein Δ-Slump or Δ-H_2O or both values are closer to zero.

10. The method of claim 1 wherein the diagnostic delta data curve, derived from delta values calculated based on differences between target values and monitored values, is visually illustrated on a screen device as intersecting perpendicular axes defining four quadrants, wherein a first quadrant corresponds to Δ-Slump > 0 and Δ-H_2O > 0; a second quadrant corresponds to Δ-Slump > 0 and Δ-H_2O < 0; a third quadrant corresponds to Δ-Slump < 0 and Δ-H_2O < 0; and a fourth quadrant corresponds to Δ-Slump < 0 and Δ-H_2O > 0.

11. The method of claim 10, wherein the diagnostic delta data curve, derived from delta values calculated based the differences between target values and monitored values, is illustrated as intersecting both the vertical axis and horizontal axis at a common point.

12. The method of claim 1 wherein, where an automated slump monitoring system detects that Δ-Slump exceeds 5 inches, and Δ-H_2O exceeds 5 gallons per yard of concrete (more preferably 3, more preferably 1), then the slump monitoring system sends an indication to a concrete plant operator to adjust the concrete mix design and illustrates the monitored Δ-Slump and Δ-H_2O values as a data point on the diagnostic delta data curve illustrated as intersecting both the vertical axis and horizontal axis at a common point, and the data point is shown as plotted as non-coinciding with the diagnostic delta data curve.

13. The method of claim 13 wherein at least one data point is illustrated with respect to the diagnostic delta data curve on a monitor screen, wherein the method further comprises providing an interactive data retrieval function whereby a

user touches the monitor screen at one of the four quadrant locations defined by the intersecting vertical and horizontal axis, thereby activating data retrieval which data comprises a concrete producer's concrete mix data information on the monitor screen.

14. A system comprising: at least one slump monitoring system for monitoring slump and water content and additions in a concrete mix load contained in rotatable mixer drums on concrete delivery trucks, the system having sensors for monitoring slump and water additions introduced into the concrete load, the sensors communicative with a slump monitoring system processor, characterized in that the processor is configured or programmed to perform the method according to claim 1.

15. A method for effectuating or improving processor-driven adjustment to a concrete mix design or concrete mix design, comprising:

(A) collecting slump and water content data, using at least one slump monitoring system, from a plurality of deliveries of concrete mix loads made from a concrete mix design;

(B) calculating delta slump value (Δ-Slump) and a delta water content value (Δ-H_2O) for the plurality of deliveries, wherein: Δ-Slump value is calculated based on differences (e.g., subtractive differences or ratios) between a target slump value (e.g., as set forth in a batch ticket) for the at least one concrete mix load and the slump value obtained for the at least one concrete mix during delivery thereof from the batch plant to a construction site (e.g., during transit from the batch plant to the construction site, during discharge/pour); and Δ-H_2O value is calculated based on differences (e.g., subtractive difference or ratio) between a target maximum water content (e.g., as forth in a batch ticket, received from concrete producer or its batch processor, received from dispatch center) for the at least one concrete mix load and the water content value as determined for the concrete mix during delivery thereof from the batch plant to a construction site;

(C) establishing a diagnostic delta data curve derived by at least two data points selected from data obtained from the plurality of concrete deliveries, at

least one data point of which contains Δ-Slump = Δ-H_2O = zero (+/- 1.5 inches in the case of Δ-Slump, +/- 1.5 gallons per cubic yard of concrete in the case of Δ-H_2O), preferably 1.0, more preferably 0.50, most preferably 0.25 in either case), where the delta values are calculated based on differences between target values and monitored values, and wherein the at least one other data point concerns at least one concrete load delivery wherein at least one of Δ-Slump and Δ-H_2O (and more preferably both) are less or greater than zero; and

(D) adjusting a concrete mix or mix design based on a comparison of Δ-Slump and Δ-H_2O of a concrete mix load delivery with the diagnostic delta data curve, the adjustment being made in terms of cement, plasticizer, or cement amount or proportion with the concrete mix or mix design; and

(E) making or adjusting a concrete mix or mix design subsequently to the adjustment in step (C), and thereafter making a further concrete mix that reflects the adjustment made to the concrete mix or mix design.

16. The method of claim 15 further comprising displaying on visual display screen the diagnostic delta data curve calculated from Δ-Slump and Δ-H_2O obtained from at least 10 deliveries (more preferably at least 50 deliveries, and most preferably at least 100 deliveries), the delta values being calculated based on differences between target values and monitored values, the curve illustrated as having a point at which Δ-Slump and Δ-H_2O both equal zero (and intersect horizontal axis and vertical axis at (0, 0)) wherein the horizontal axis indicates delta water content values and the vertical axis indicates delta slump values.

17. A method comprising: collecting Δ-Slump and Δ-H_2O data pairs from a plurality of delivered concrete loads using a slump monitoring device on at least one concrete delivery truck, deriving a “diagnostic delta data” (DDD) curve based on a curvilinear relationship of averaged and/or normalized Δ-Slump and Δ-H_2O data pairs wherein, in at last one of the pairs the target slump and target water content were met; and displaying, on a monitor or screen, the DDD curve and at least one other Δ-Slump, Δ-H_2O data pair wherein at least one or both of the Δ-slump and Δ-H_2O values

are less or greater than zero, where the delta values are calculated based on differences between the target values and the monitored values.