SUDAS Revision Submittal Form

Status Date:	As of 5/12/2017	**Topic:**	Laser guided screed and concrete pumping
Manual:	Specifications	**Manual Location:**	Section 7010, 3.01, B & C and 3.02, F

Requested Revision:

3.01 EQUIPMENT

B. Concrete Delivery Equipment:

1. General:

a. In handling concrete from the mixer to the place of deposit, take care to avoid segregation.

b. When concrete is deposited through a chute, slope the chute to allow concrete to flow slowly without segregation. Place the delivery point of the chute as close as possible to the point of deposit. Keep chutes and spouts clean. Thoroughly flush them with water before and after each run. Discharge the water outside the paving area in an approved concrete washout area.

c. Provide alternate plan for concrete delivery in event of equipment failure.

d. Take concrete samples from material placed on the subgrade or subbase.

2. Concrete Transfer Equipment:

a. Utilize placers, conveyors, buckets, or buggies designed specifically for transporting concrete.

b. Do not allow concrete to free fall into or out of transfer equipment.

c. Meet the requirements of Section 7010, 2.02, B, 2 for air entrainment of the concrete mix and testing for compliance.

3. Concrete Pumps:

a. Do not pump concrete through aluminum conduit or tubing.

b. Use the concrete pump to deliver the material as close to horizontal as possible, keep restrictions and drops to a minimum, and avoid free fall.

c. Meet the requirements of 7010, 2.02, B, 2 for air entrainment of the concrete mix and testing for compliance.

d. Sample the first load after pumping a minimum of 3 cubic yards. Sample after each significant change in boom angle.

e. Sample before and after the pump to determine if any changes in the slump and other significant mixture characteristics occur.

f. When sampling at the end of the placement line, take care to ensure that the sample is representative of the concrete being placed from the pipeline. Note: Changes to the placement rate or boom configuration can result in changes in the concrete properties. Typically, the vertical position of the boom results in the greatest potential for air loss while the horizontal position of the boom has the least potential. Location of pumping equipment should be determined so that it is possible to maintain a consistent, low boom angle as much as possible during placement.

g. If air test shows that air entrainment is outside of the allowed range, follow procedure as outlined in Section 7010, 3.07, B.

h. Leaks in the line or pump hydraulics, which would allow air to be added to the concrete, are prohibited.

~~B~~C. Concrete Placement Equipment:

1. **Consolidating and Finishing Equipment:**
   a. Use a paving machine that meets all of the following:
      1) Is designed for the specific purpose of placing, consolidating, and finishing concrete pavement.
      2) Develops vertical edges on the pavement.
      3) Is self propelled and equipped with a means for spreading the concrete to a uniform depth before it enters the throat.
      4) Vibrates the concrete to the full width and depth being placed in a single passage. Use vibrating tubes or arms working in the concrete or a vibrating pan operating on the surface of the concrete.
      5) Produces a surface reasonably free of voids and tears.
      6) When the paver is operated on previously placed concrete, prevent damage to the pavement surface.
      7) For slip form pavers, use a paver equipped with automatic horizontal and vertical grade controls.
   b. Hand methods utilizing air screeds and vibrating screeds may be used for short pavement runs, cul-de-sacs, driveways, and some intersections.
   c. When allowed by the Engineer, use stringless paving equipment capable of providing the accuracy necessary to comply with the requirements of Section 7010.
   d. Use a laser guided screed that meets all of the following:
      1) Designed for the specific purpose of placing and finishing of concrete pavement using a 3-dimensional surface model.
      2) All equipment for laser guided screed, including the guidance system, will meet the project design model tolerances.
      3) Will provide consolidation to full width and full depth of concrete placement. Provide intermediate consolidation by using external hand held vibrators.
      4) Produces a surface reasonably free of voids and tears.
      5) Provide boom-style screed (drive-in screeds are not allowed) with an auger, boom, placement head (water spray mechanism not allowed), guidance equipment, and software to produce 3-dimensional surface.
      6) Produces pavement smoothness as specified in Section 7010, 3.07, C.

3.02 PAVEMENT CONSTRUCTION

F. Concrete Pavement Placement:

1. Use paving machine for all uniform width pavements 8 1/2 feet or more in width and 250 feet or more in length, unless alternate methods are approved by the Engineer. Screeds and laser guided screeds may be used on short pavement runs up to 250 feet.

2. Place, consolidate, and finish the concrete to the full depth and width conforming to the specified crown and cross-section in a single operation.

Reason for Revision: Adding to the specifications to allow the use of laser guided screeds and concrete pumping.

Comments: None.

District:	☐ 1 ☐ 2 ☐ 3 ☒ 4 ☐ 5 ☐ 6
Initial Comments:	None.
Final Comments:	None.
Action:	☐ Deferred ☐ Not Approved ☒ Approved

District:	☐ 1 ☐ 2 ☒ 3 ☐ 4 ☐ 5 ☐ 6
Initial Comments:	None.
Final Comments:	Noted minor errors. *Note - these were corrected.*
Action:	☐ Deferred ☐ Not Approved ☒ Approved

District:	☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
Initial Comments:	None.
Final Comments:	None.
Action:	☐ Deferred ☐ Not Approved ☒ Approved

District:	☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
Initial Comments:	None.
Final Comments:	None.
Action:	☐ Deferred ☐ Not Approved ☒ Approved

District:	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☒ 6
Initial Comments:	What's the problem with aluminum conduit? Add info for transfer equipment. *Note - added transfer equipment info. For the aluminum conduit issue - the concrete is highly corrosive to aluminum, which would result in damage to the tubing. Less of a concern is that fact that after some time, concrete in contact with aluminum begins to give off hydrogen gas bubbles.*
Final Comments:	Add language to clarify discharging into an approved washout area. *Note - done.*
Action:	☐ Deferred ☐ Not Approved ☒ Approved

District:	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☒ 5 ☐ 6
Initial Comments:	None.
Final Comments:	None.
Action:	☐ Deferred ☐ Not Approved ☒ Approved

Final District Action Summary: All 6 districts approved; see comments above.

Board of Directors Action: Approved.