TOWN OF WINDSOR
ASPHALT PLACEMENT STANDARDS
Asphalt / Hot Mix Asphalt (HMA)

Asphalt Type ½" HMA Type A with PG 64-16 oil binder. Gradation and Job Mix Formula (JMF) compliance per most current Section 39 of Caltrans Standard Specifications.

Tack Coat Asphalt binder shall be **SS-1** type emulsion, unless otherwise specified by the Town Engineer. Tack coat shall be placed between existing pavement courses & along all asphalt and concrete contacts.

Asphalt Production The contractor shall be responsible for hiring a qualified manufacturer and supplier for all asphaltic products. It is the contractor's responsibility to assure that the materials produced and supplied by the asphalt plant conform to these specifications.

Placement and Compaction All pavement must be **placed and compacted in two equal layers** (unless the total thicknesses is 2½" or less), unless otherwise directed by the Town Engineer. Asphalt shall not be placed if the ground temperature is below 55^{0F}, on a wet or unclean surface, or if rain is predicted.

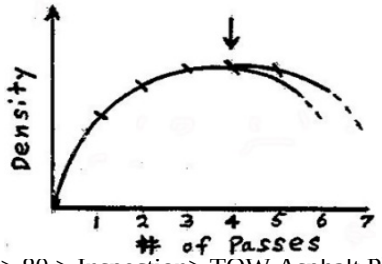
The temperature of the asphalt shall not exceed 325^{0F} (prior to discharge/ or during placement). The upper layer shall not be placed over the lower layer until the temperature of the lower layer has dropped below 115^{0F}. If the second layer of asphalt is being placed within 8 hours of the first layer, no asphalt binder shall be necessary, as long as the surface of the lower layer remains clean.

All compaction of the asphalt shall fall within the *"Rolling Pattern Guidelines"* listed herein, unless otherwise approved by the Town Engineer. Adjustments within the rolling pattern guidelines will be determined by the use of a nuclear gauge and temperature readings.

The nuclear gauge will be used to determine the "break-over" point of the asphalt (as determined by the highest wet density reading of a nuclear gauge) to help guide in the number of passes necessary per rolling sequence. A pass shall be considered "one coverage" by the roller in one direction.

Establishing A Rolling Pattern

(use with Rolling Pattern Guidelines on page 2)



Rolling Pattern Guidelines

During the *Compaction Rolling Sequence* after 2 passes, take a wet density reading with nuclear gauge in 'back scatter mode' or with a thin lift gauge. Mark the test location. After each consecutive pass take a reading at the same location. The highest density reading prior to a leveling off or lowering density will be the number of passes used for compaction (the "Break Over Point").

Rolling Sequence	*Compactor Type*	*Temperature*	*Nº of Passes*
➢ Breakdown (static)	8 ton steel drum (min)[1]	250^{0F} to 325^{0F}	2 to 3
➢ *Compaction (Vibratory)	Pneumatic Tired Roller[1,2]	175^{oF} to 250^{0F}	4 to 7 *
➢ Finish (Vibratory)	8 ton steel drum (min)[1]	115^{oF} to 175^{oF}	2 to 4

[1] A combination steel drum/rubber tired roller may be substituted with Town Approval. ***Smaller trench compaction may require only a medium sized steel drum vibratory compactor.***

[2] Min 6 ton pneumatic roller, with overlapping tires - inflated to manufactures max psi.

Note: *A "vibra plate" may not be used to compact asphalt (except for edge smoothing).* Only equipment approved by Town Engineering Department shall be used. Smaller rollers may be accepted upon Town Engineer approval.

Once an acceptable rolling pattern has been determined, the contractor shall not vary from it unless the monitoring by the QC engineering firm suggests differently. The QC engineering firm's field technician shall regularly monitor (*by use of the nuclear gauge and temperature gun readings*) the rolling/compaction operation, and as necessary, recommend rolling pattern change.

The contractor shall employ a qualified engineering lab to perform Quality Control (QC). The QC lab shall be on-site during the placement and compaction (Rolling Pattern) to guide the contractor.

It shall be the QC engineering firm's responsibility to monitor and document the rolling/compaction operation, and then present their observations in the final project report.
The Town of Windsor may utilize their Quality Assurance (QA) laboratory at any time to confirm the QC observations and data. Should conflicting data or observations occur, the final acceptance will be made by the Town Engineer based on our QA lab recommendations and results.

HMA Finish Surface The final surface tolerance/deviation shall not exceed ¼", with transverse joints not exceeding ⅜"—as measured with a 10' straight edge. A quick test is to flood the newly paved surface with a water truck; no puddled water exceeding the aforementioned depths should remain. At the discretion of the Town Engineer, any areas that have not met rolling pattern, gradation, JMF, or surface tolerance, may be removed and or repaired to meet Town of Windsor *Asphalt Placement Standards*.

On specified projects, the Town of Windsor Engineer may determine to use the State of California Department of Transportation (Caltrans) most current specifications from Volume I, Section 39, or portions thereof, in lieu of a *Rolling Pattern*.

Town of Windsor Public Works, Engineering Department
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