Make the following section a part of the Standard Specifications:

## SECTION 694 – INERTIAL BARRIER SYSTEM

**694.01 Description.** This work includes furnishing and installing Inertial Barrier System at the prepared site shown in the plans according to the requirements of the contract or as ordered by the Engineer.

**694.02 Materials.** The Inertial Barrier System shall consist of the following:

**(A) Container.** The inertial Barrier shall consist of modules in 200, 400, 700, 1400, and 2100 lbs. sizes. 200, 400, 700, and 1400 lbs. modules shall consist of a container molded in one piece with a minimum capacity of 21 cubic feet. The material shall be durable, weather proof, and shall be formulated to resist deterioration from ultraviolet rays. The color shall be yellow. This model must be of continuous molded construction and be nestable. The modules shall be designed and manufactured from a frangible polyethylene material, which shall shatter upon impact to permit dispersion of the sand mass container within.

**(B) Lid.** Each module shall have a black lid, which locks securely over the top lip of the outer container. Material shall be durable, weatherproof, and shall be formulated to resist deterioration from ultraviolet rays.

**(C) Insert.** All 200, 400, and 700 lbs. modules will require a cone-shaped supporting insert used to support various sand masses. Cone inserts shall be of one-piece molded construction and be nestable.

**(D) Sand.** Sand placed into these modules should be washed concrete sand conforming to ASTM-C-33 or equal and as specified by the Manufacturer's requirements.

Each Inertial Barrier System array shall be configured to provide a satisfactory average rate of deceleration (8 g's maximum preferred for each row) for errant vehicles in the weight ranges of 1810 to 4410 lbs. The inertial barrier system shall meet the requirements of NCHRP 350 for the appropriate Test Level (TL-2 for Low Speed Design Roadways and TL-3 for High Speed Design Roadways) and for nondirective gating crash cushions. For impact vehicles weighing between 1810 and 4410 lbs. and traveling at speeds of up to 62 mph for TL-3 (44 mph for TL-2), the maximum 24-inch occupant fail space velocity shall be less than 39 ft/sec and the vehicles' highest 10 millisecond occupants' ride-down acceleration shall be less than 20 g's.

The center of gravity of each properly-filled module shall be at a height which will aid in controlling the pitch of standard passenger vehicles.

The components of the modules shall interface to prevent leakage of sand contained therein. The interface shall, however, permit drainage of excess water contained within the sand mass.

**694.03 Construction Requirements.** The Contractor shall submit 7 days following the Award of Contract, a written certification to the Engineer stating that the crash cushion to be furnished satisfies the requirements of NCHRP 350 with the appropriate Test Level (TL-2 for Low Speed Design Roadways and TL-3 for High Speed Design Roadways). The Contractor shall also provide a copy of the FHWA approval letter stating that the system satisfies the requirements of NCHRP 350 for the appropriate Test Level.

Placement of the modules within an array and the geometric design of the array shall be as shown on as-built plans for the appropriate locations, as indicated by the manufacturer's specifications or as ordered by the Engineer based on the design speed of the roadway. In locations where the barrier system separates two roadways, the barrier array and geometric design shall be based on the higher design speed of the two roadways.

After the completion of the project, the sand will be removed and disposed from each module and each empty module shall be hauled as directed by the Engineer. Prior to hauling, each module shall be cleaned and nested together for transport.

**694.04 Method of Measurement.** The Engineer will measure the Inertial Barrier System per each.

**694.05 Basis of Payment.** The Engineer will pay for the accepted quantities of Inertial Barrier System, of the types specified in the proposal schedule, per each. The price includes full compensation for submitting a list of materials and equipment to be incorporated in the work; written certifications and approval letters; grading; furnishing, installing, and compacting aggregate subbase; furnishing, assembling, and installing an Inertial Barrier module with sand; removal & disposal of sand, cleaning and hauling the empty modules as specified in the proposal after completion of the project; and furnishing labor, materials, tools, equipment, and incidentals necessary to complete the work.

The Engineer will make payment under:

| **Pay Item** | **Pay Unit** |
|---|---|

Inertial Barrier System _____ Each”

**END OF SECTION 694**