



# **DARPA Grand Challenge 2005**

National Qualification Event (NQE) Practice Area Routes

August 29, 2005

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**Defense Advanced Research Projects Agency**

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# DARPA Grand Challenge 2005

## NQE Practice Area Routes

Three practice areas have been established for team use at NQE (Figure 1).



Figure 1. NQE practice areas

At 10:00 AM on September 28, teams will be summoned to undergo static and dynamic inspections. Static inspections will take place in the garage area as described in the NQE handout (August 8). For the dynamic inspections, teams will be assigned to a practice area and will run the RDDF of the corresponding dynamic inspection route (Figure 2). The first point of these RDDFs is approximately 40 feet in front of the start chutes and has a speed limit of 10 mph and a lateral boundary offset (LBO) of 10 feet. The vehicle starts at a location that is not within the course boundary defined by the waypoints and LBO of the first route segment. As part of the inspection process, the vehicle should accelerate to approximately 10 mph over a distance of 100 feet and come to a controlled stop in response to an E-stop PAUSE command.

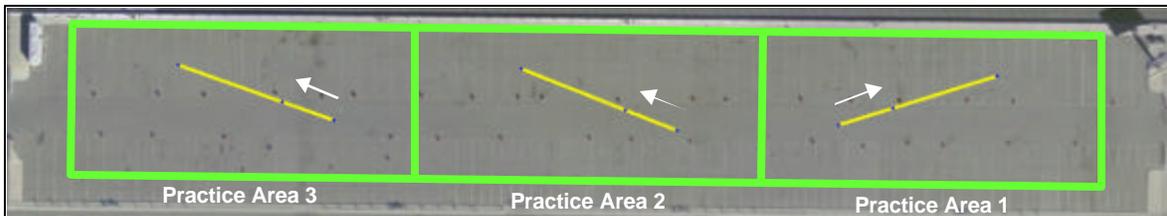


Figure 2. Dynamic inspection routes

Upon conclusion of the dynamic inspections on the afternoon of September 28, practice areas will be opened to all teams for vehicle testing. Each practice area has three distinct routes for which an RDDF will be provided.

The elliptical practice route (Figure 3) tests basic turning maneuvers and the ability to follow waypoints.



Figure 3. Elliptical practice routes

The figure-8 route (Figure 4) has tighter turns and tests the vehicle's ability to detect and avoid obstacles placed at the cross point of the route. Sample obstacles will be provided in the practice areas.

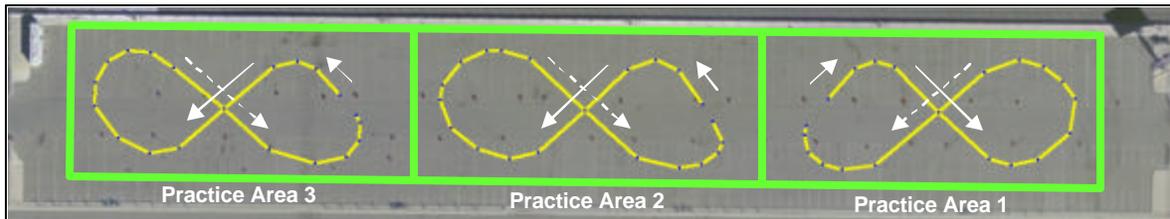


Figure 4. Figure-8 practice routes

The right-angle route (Figure 5) allows teams to test the vehicle's ability to perform a series of sharp turns.

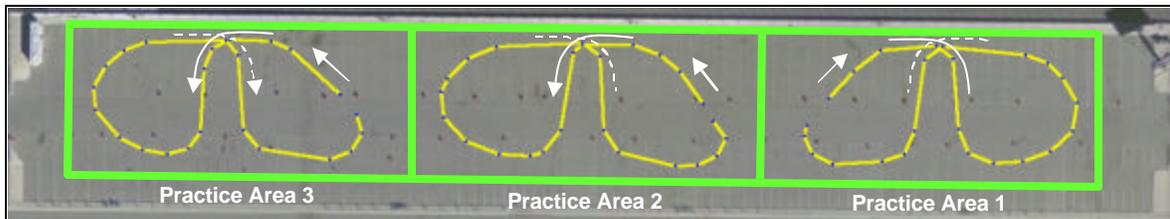


Figure 5. Right-angle turn practice routes

All routes are configured to orient vehicles so they may easily restart the route as they finish the last waypoint.

DARPA will modify NQE practice routes as needed prior to and during NQE.

Please direct questions or comments to [grandchallenge@darpa.mil](mailto:grandchallenge@darpa.mil).