INVITATION FOR BIDS
OFFICE OF PROCUREMENT & CONTRACTS

1. INSTRUCTIONS FOR BIDDERS

a. Sealed bids will be received in the Office of Procurement & Contracts, Mississippi State University, for the purchase of the items listed herein.

b. All bids must be received in the Office of Procurement & Contracts on or before the bid opening time and date listed herein. Delivery of bids must be during normal working hours, 8:00 a.m. to 5:00 p.m. CST, except on weekends and holidays when no delivery is possible.

c. Bidders shall submit their bids either electronically or in a sealed envelope.
   i. Sealed bids should include the bid number on the face of the envelope as well as the bidders' name and address. Bids should be mailed to: 245 Barr Avenue, 610 McArthur Hall, Mississippi State, MS 39762.
   ii. At this time we only accept non-ITS bids electronically. For electronic submission of bids, go to: https://www.ms.gov/dfa/contract_bid_search and use the RFX number on the next page as your reference number.

d. All questions regarding this bid should be directed to the Office of Procurement & Contracts at 662-325-2550.

2. TERMS AND CONDITIONS

a. All bids should be bid "FOB Destination"

b. Bidders must comply with all rules, regulations, and statutes relating to purchasing in the State of Mississippi, in addition to the requirements on this form. General Bid Terms and Conditions can be found here: https://www.procurement.msstate.edu/procurement/bids/Bid_General_Terms_May_2019_V2.pdf

c. Any contract resulting from this Invitation for Bid shall be in substantial compliance with Mississippi State University's Standard Contract Addendum: https://www.procurement.msstate.edu/contracts/standardaddendum.pdf

Bid Number/RFX Number: 20-27/RFX#3160003462
Opening Date: March 3, 2020 @2:00 p.m.
Description: Drive-by-Wire

Vendor Name: _____

Vendor Address: _____

Telephone Number: _____

Days the Offer is Firm: _____

Authorized Signature: _____

Name: _____

Title: _____

Item	Quantity	Description	Unit Price	Total Price
1	1	MRZR D4 into Drive-by-wire		

1. Introduction

Mississippi State University, is seeking bids for conversion of a Polaris MRZR-D4 into a drive-by-wire platform for autonomous systems research.

2. Specifications

2.1. Drive-by-wire Control

2.1.1. The vehicle shall be outfitted with a drive-by-wire system capable of achieving at a minimum the specifications below.

2.1.2. The drive-by-wire system shall have integrated access to stock vehicle firmware and be developed with vehicle OEM engineering support.

2.1.3. Lower-level throttle, brake and steering commands shall be controlled by the drive-by-wire control system in order to achieve a commanded speed and steering angle. The requests sent to the drive-by-wire system will be:

- Vehicle speed
- Steering angle
- PRNDL request
- Vehicle state (off, accessory, run, start)
- Error (disengage drive-by-wire until reset)
- Emergency stop (full brake)
- Throttle (for teleoperation)

2.1.4. Feedback: The completed system shall also include feedback of the following parameters:

- Current steering angle
- Current vehicle speed or wheel speed
- Current ignition position
- Transmission status (current position)
- Fuel level
- Parking brake status (off/on)
- Powertrain data such as component temperatures and engine speed

2.2. Autonomous algorithm

2.2.1. The system shall be equipped with a waypoint-following autonomy algorithm, including built-in GPS sensing.

2.3. Electrical

2.3.1. The system will be equipped with a wireless remote emergency stop with heartbeat monitoring feature.

2.3.2. The system will also be equipped with a local emergency stop.

2.3.3. The 12V system will include a battery disconnect switch mounted at the battery.

2.4. Mechanical

2.4.1. The drive-by-wire integration shall retain all seating, as well as access to the stock vehicle controls (wheel, pedals, shift lever, etc.).

2.4.2. All seating and built-in storage areas will remain usable. The drive-by-wire system will be integrated as invisibly as possible.

2.5. Human Interface

2.5.1. All stock vehicle controls will remain in place.

2.5.2. There will be a single momentary switch to enable autonomous mode, requiring at least three actions to activate (for example, 1. Depress brake, 2. Depress button, 3. Release button, 4. Release brake).

2.5.3. Autonomous mode status will be visibly conveyed through lights or screens, with at least one indicator clearly visible from outside of the vehicle (i.e. light tree on top).