

**Project name:**  
NCDOT Build Grant-Fort Bragg

**Project ref:**

**To:** Carey Barr

**From:**  
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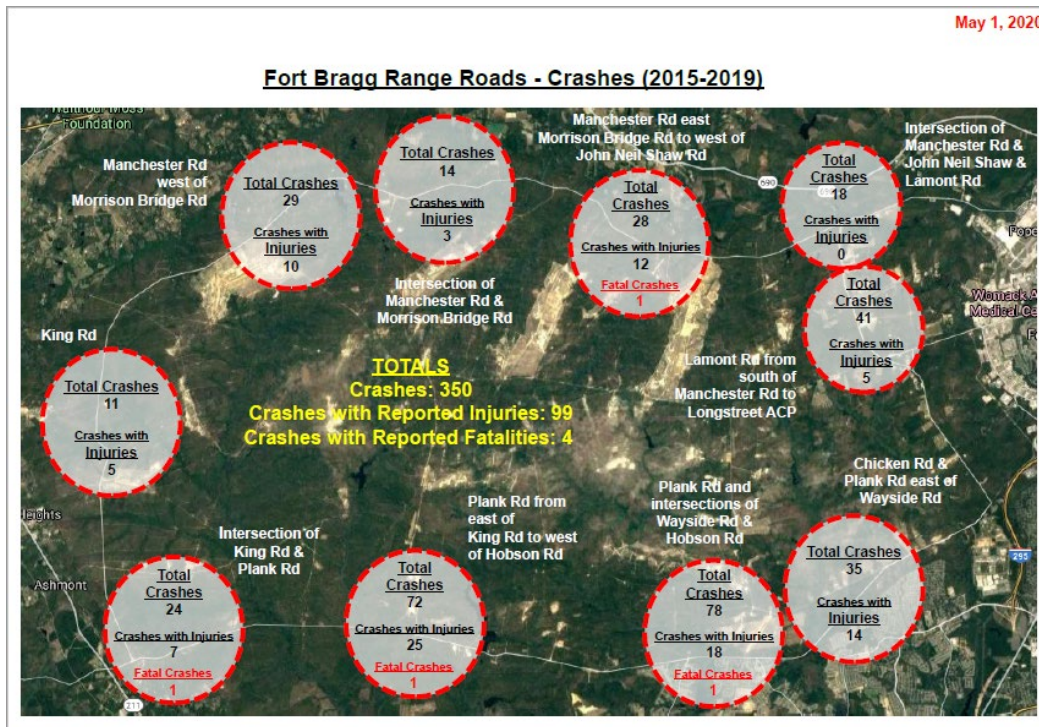
**Date:**  
May 12, 2020

# Memorandum

**Subject:** NCDOT Build Grant-Bragg

Per your request, I have prepared a crash summary and crash and injury reduction analysis for the various routes included within this project in the vicinity of Fort Bragg in North Carolina. This project includes multiple routes that serve traffic in and around the Base known as the range roads. The project scope includes modernization of roadways to improve features such as drainage, pavement structure, pavement/shoulder widening, shoulder clearing/mowing, signage upgrades, guardrail upgrades and pavement resurfacing.

Raw crash data for this analysis was provided by the Onyx Group and included a tabular listing by segment (see attached) as well as GIS based maps of crash locations. The tabular crash information is summarized below in Map 1.



NCDOT was consulted concerning the crash reduction factors for a scope including pavement resurfacing and modernization. The NCDOT provided a crash reduction factor for road modernization that is intended to capture improvements similar to the scope of this project. The provided factor, which represents a 20% reduction in crashes and injuries, is a planning level factor used to help inform decisions at the project planning stage concerning safety benefits.

The methodology used to capture crash benefits included applying the safety benefit factor for roadway modernization to the existing crash history provided by the Onyx Group/Fort Bragg to yield crashes per year reduced as well as injuries per year reduced. The crash history included 5 years of data between February, 2015 and February, 2020. Table 1 below shows the total number of crashes and the severity distribution among all recorded crashes as well as the total number of crashes per year reduced by this project.

Table: 1 Crash Severity Summary

| <b>Crash Severity Summary (5 Years of data)</b> |                          |
|---|--------------------------|
| <b>Severity</b>                                 | <b>Number of crashes</b> |
| K-Killed  | 4                        |
| A-Incapacitating                                | 46                       |
| B-Non-Incapacitating                            | 52                       |
| PDO-Property damage only                        | 248                      |
| <b>Total number of crashes</b>                  | <b>350</b>               |
| <b>Crashes reduced per year (20%)</b>           | <b>14</b>                |

Table 2 below summarizes the Injury reductions per year as well as the crash cost savings per year for each severity that are associated with the upgrade of the roadway segments. This project will provide an estimated 2.8-million-dollar savings in crash costs per year which is a significant savings.

Table 2: Crash Cost Summary for all segments

| <b>Crash Cost Summary</b>              |                           |                                 |                          |                         |
|--|---------------------------|---------------------------------|--------------------------|-------------------------|
| <b>Severity</b>                        | <b>Number of injuries</b> | <b>Reduction per year (20%)</b> | <b>Cost Per</b>          | <b>Savings per year</b> |
| K-Killed                               | 4                         | 0.16                            | \$9,600,000              | \$1,536,000             |
| A-Incapacitating                       | 46                        | 1.84                            | \$459,100                | \$844,744               |
| B-Non-Incapacitating                   | 52                        | 2.08                            | \$125,000                | \$260,000               |
| U-Injury (severity unknown)            | 22                        | 0.88                            | \$174,000                | \$153,120               |
| PDO-Property damage only (per vehicle) | 444                       | 17.76                           | \$4,400                  | \$78,144                |
| <b>Total Injuries (Incl. K)</b>        | <b>124</b>                | <b>4.96</b>                     |                          |                         |
|  |                           |                                 | <b>Total saved/ year</b> | <b>\$ 2,872,008</b>     |

Memorandum

To provide more visualization of the Range Road crashes, follow this link to an interactive map that displays the crashes with pins on the map: [Fort Bragg Range Roads Crash Data \(Feb 2015 - Feb 2020\)](#) Clicking the crash symbol pins will display information about each particular crash.

Finally, the table of the raw crash data as provided by The Onyx Group and Fort Bragg is attached for reference if needed.

If you should need additional information concerning the safety data associated with the Range Roads, please do not hesitate to contact me.