

# US 491 Supplemental Phase B – Detail Evaluation of Alternatives

## Executive Summary

### Introduction

US 491 is a major north/south route that begins at Interstate 40 in Gallup, New Mexico and ends at US 191 in Monticello, Utah (See Figure 1, Location Map). The existing US 491 highway is a 4-lane divided facility from Gallup north to the intersection with Navajo 9 which is at approximately milepost 15.3, the highway then transitions to a 2-lane rural road. At approximately milepost 84.7, the road transitions back to a 4-lane highway and remains 4-lanes all the way to the Colorado state line.

A previous study was completed for the US 491 corridor in March 2004. The previous study evaluated US 491 from milepost 15.3 to milepost 84.7. The Detailed Evaluation of Alternatives Report for the US 491 corridor (March 2004) recommended that the existing two-lane road be widened to four-lanes with a varying median. The existing lanes were to be reconstructed or rehabilitated. An Environmental Assessment was completed in May 2004. The Findings of No Significant Impact (FONSI) was issued by the Federal Highway Administration (FHWA) on September 20, 2004.

The estimated cost for the preferred alternative was \$212,800,000 which was higher than the \$108,750,000 that was originally budgeted by the New Mexico Department of Transportation (NMDOT). The project was put on hold while options were evaluated for implementing the project. The NMDOT is committed to constructing a 4-lane facility as recommended in the previous study and is moving forward with two studies to re-evaluate US 491; a US 491 North Corridor study, and a US 491 South Corridor study. These supplemental reports will evaluate recommendations from the Value Planning Report and the Value Engineering Lite (Design optimization) Report that the NMDOT has conducted since the project was put on hold.

This supplemental study re-evaluates the north corridor of US 491 beginning at the intersection of state highway NM 134, within the community of Sheep Springs, at approximately milepost 46 and ending at the intersection of US 491 with Navajo 13 at approximately milepost 84.7 where the highway transitions to a 4-lane facility.

### Summary of Changes

The following changes from the Value Planning, the Value Engineering Lite and the design team will be incorporated into the project.

- Rehabilitation / reconstruction / pavement preservation on existing lanes will be deferred until the corridor is a four lane facility.
- Borrow ditches will be constructed adjacent to the new lanes where feasible in order to reduce the purchase of borrow and material haul. The success of this cost savings will depend on whether or not the earth in the borrow ditches is suitable for use in the roadway embankment.
- The median will be reduced from 60 feet to 46 feet in order to reduce the length of pipes and the earthwork.
- The design speed will be reduced from 80 mph to 70 mph. This eliminates the need to reconstruct nine vertical curves that did not meet the 80 mph design criteria.
- A 50 year drainage criteria not to overtop the road will be used instead of a 100 year drainage criteria. This should reduce the number of additional pipes to be added.

- Deceleration lanes will be constructed only at major intersections. Acceleration lanes will not be used.
- The driving lane width will be reduced from 12 feet to 11.5 feet.
- The Outside shoulders will be reduced from 8 feet to 6 feet and a 4% cross slope will be used.
- A course graded PMBP will be investigated for the top asphalt lift instead of the Open Graded Friction Course.
- Fill slopes for 0 to 5 feet will have 4:1 slopes instead of 6:1 to reduce earthwork requirements.

**Construction Cost Estimate**

These changes and revised quantities based on more design for the North Corridor have resulted in a construction cost estimate of \$141,305,150.15 including New Mexico Gross Receipts Tax, Navajo Tax and 8% Engineering and Contingencies (E&C) for the entire project. Since the design is not yet at a preliminary design this estimate includes a 10% uncertainty factor to account for items that will be encountered during the design process. The cost estimate for the North Corridor alone is \$75,679,125.65.

A breakdown of the preliminary construction costs including taxes and E&C for each segment is shown in the following table:

<b>Preliminary Construction Cost Estimates</b>		
<b>Segment</b>	<b>Mileposts</b>	<b>Cost</b>
<b>5</b>	<b>46 to 52.8</b>	<b>\$12,217,312.20</b>
<b>6</b>	<b>52.8 to 59</b>	<b>\$12,416,381.52</b>
<b>7</b>	<b>59 to 68</b>	<b>\$17,909,704.19</b>
<b>8</b>	<b>68 to 75</b>	<b>\$13,392,937.98</b>
<b>9</b>	<b>75 to 85.07</b>	<b>\$19,742,789.76</b>