

Submitted By: Chris R. Lacy Date: 10 / 26 / 15 Recommended: [Signature] Date: 10 / 26 / 15  
Engineer of Record

To: Brad Reynolds  
Program / Project Manager

**BASIS OF DESIGN EXCEPTION**

- Request for Approval of Design Exceptions to AASHTO Guidelines
- Request for Approval of Design Exceptions from Standard SCDOT Procedures

**PROJECT CHARACTERISTICS**

County: Lexington Rd./Route: I-20 Const. Pin: P027003  
From: MM 49.5 (West of Longs Pond Rd S-204) To: 60.6 (West of US 378)  
Length: 11.1 MPO / COG: COATS  
Work Type: Interstate Widening  
Functional Classification: Urban Principle Arterial - Interstate

Group Designation: ( 1  / 2  / 3  / 4  ) (if applicable)  
Type of Terrain: ( Level  / Rolling  / Mountainous  )  
Design Speed: 60 and 70 (mph)

2018 ADT 63900  
2038 ADT 81900

TRUCKS 20 %

**CRASH ANALYSIS**

(Attach additional sheets with accident history data)

**TOTAL PROJECT ESTIMATE (\$)** 109.6M

**CHECK APPROPRIATE BOX(ES) FOR DESIGN EXCEPTION(S)**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Design Speed         | <input type="checkbox"/> Maximum Grade       | <input type="checkbox"/> Travel Lane Width         |
| <input type="checkbox"/> Horizontal Alignment | <input type="checkbox"/> Vertical Clearance  | <input checked="" type="checkbox"/> Shoulder Width |
| <input type="checkbox"/> Minimum Radii        | <input type="checkbox"/> Bridge Width        | <input type="checkbox"/> Horizontal Clearance      |
| <input type="checkbox"/> Vertical Alignment   | <input type="checkbox"/> Structural Capacity | <input type="checkbox"/> Stopping Sight Distance   |
| <input type="checkbox"/> Level SSD K-Values   | <input type="checkbox"/> Superelevation Rate |  |
|   | <input type="checkbox"/> Cross Slope         |  |
|   | <input type="checkbox"/> Travel Lanes        |  |
|   | <input type="checkbox"/> Shoulders           |  |

**DESCRIBE ELEMENT(S) FOR DESIGN EXCEPTION(S)**

(Attach additional sheets as needed)

Due to the widening of I-20 in the area of the 36' wide median, the shoulder width at US 1 around bridge piers that support the overpass will be narrower than AASHTO's 4' minimum requirement on the left and less than 10' on the right. Based on survey data and existing plans, the proposed shoulder width will be reduced to 2'9" on the inside and 6'0" on the outside.

**JUSTIFICATION FOR DESIGN EXCEPTION(S)**

A vast majority of interstate miles within urban areas have median widths of 36' on four lane divided highways. In order to minimize construction impacts, right of way impacts, disruption of traffic for longer periods, and minimize construction costs, adding additional lanes into the 36' median is a consistent practice. There was no increase in crash frequency at interchanges along I-20 with similar shoulder width reductions based on review of crash data.

**DESCRIBE STEPS TO ELEMIMATE DESIGN EXCEPTION(S), INCLUDE COST**

(Attach additional sheets as needed) \_\_\_\_\_

In order to eliminate the design exception, the inside shoulder width at US 1 would need to be a minimum of 4' (AASHTO) or 10' to meet SCDOT requirements. The outside shoulder width at US 1 would need to be 10' (AASHTO) or 12' (SCDOT). The additional width would require replacing US 1 overpassing structure. The estimated cost to rebuild US 1 overpass is \$16,000,000.

**HOW WILL FUTURE CONSTRUCTION IMPACT DESIGN EXCEPTION(S)?**

(Attach additional sheets as needed) \_\_\_\_\_

Any additional lanes (4 in each direction) constructed within this corridor would require reconstruction of the overpass. At that time, the overpass could be reconstructed to provide appropriate widths for shoulders.

**RECORD OF DECISION**

- For
- Against

  
\_\_\_\_\_  
(Regional Design Manager/  
Program Manager / DEA)      Date 10/26/15

- For
- Against

  
\_\_\_\_\_  
(Regional Production Engineer)      Date 10/26/15

- Approved
- Denied

  
\_\_\_\_\_  
(Director of Preconstruction)      Date 10/26/15

- Concur

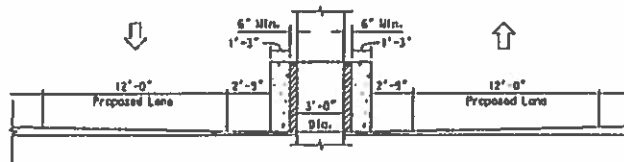
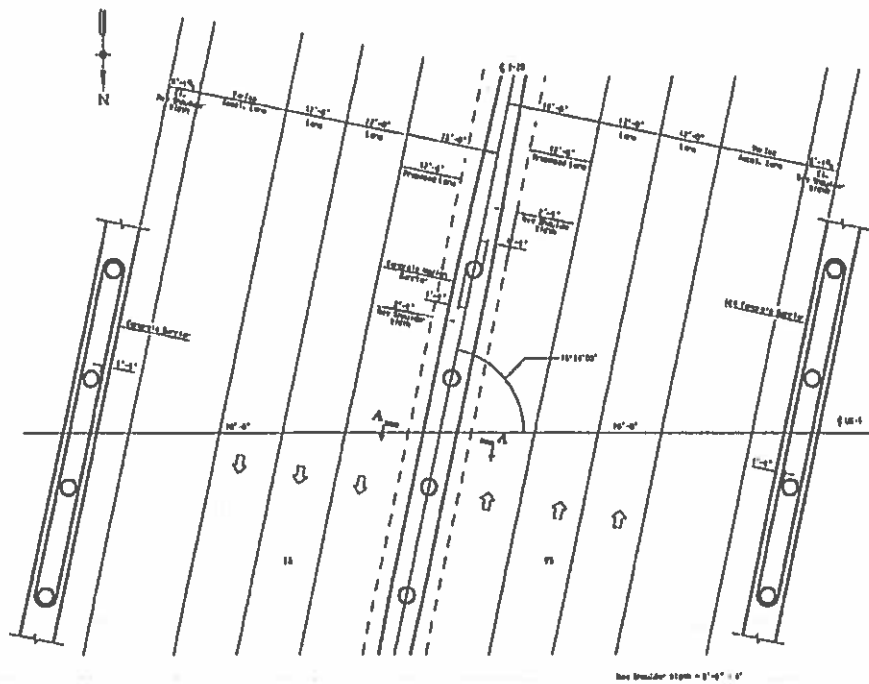
  
\_\_\_\_\_  
FHWA (NHS > \$50 million & All Interstate)      Date 10/30/15

cc:  
Director of Preconstruction  
FHWA  
Preconstruction Support Engineer  
Regional Production Group Engineer  
District Engineering Administrator  
Director of Traffic Engineering

	Arterial US 1 stage construction				New Align Stage Const	SF cost \$120 \$180
	Length	width	cost / sf	total (rounded)		actual cost
Bridge 1	320	79	\$180			\$4,550,400
Approach Slabs	20	79	\$105	2 each		\$331,800
Road work			\$4,000,000			\$4,000,000
traffic control			\$1,000,000			\$1,000,000
Rem. And Disposal	268	69	\$20			\$369,840
Conting. At 5%						\$512,602
Eng. And Conteng. (15%)						\$1,614,696
Const. Sub Total						\$12,379,338
PE @ 10%						\$1,237,934
ROW (est)						\$2,000,000
Total				\$16,000,000		\$15,617,272

Stage Const but length of bridge may accommodate more length to span more lanes underneath

# US-1



Section A-A