

Leo Rodriguez, PE

Structural Engineer - Associate

Hardesty & Hanover, LLC

Tampa, FL, USA

lrodriguez@hardestyhanover.com

Rafal Wuttrich, PE

Principal Bridge Engineer

Hardesty & Hanover, LLC

Tampa, FL, USA

rwuttrich@hardestyhanover.com

Henri Sinson, PE

Principal Associate

Hardesty & Hanover, LLC

Sunrise, FL, USA

hsinson@hardestyhanover.com

Why not straddle it? I-75 Ramp H-4 Bridge and Integral Straddle Bent Cap

ABSTRACT

Tolled express lanes have been recognized as a cost-effective alternative to deliver upgraded infrastructure when the transportation needs exceed available conventional funding. They have become an integral part of Florida's efforts to deliver improved mobility and enhance economic development. The tolled I-75 Express Lanes Corridor is aimed to address congestion, accommodate future regional growth and development, enhance hurricane and other emergency evacuation, and improve system connectivity between key transportation facilities¹. This paper discusses the structural and construction solutions for the I-75 Express Lanes in South Florida, specifically Ramp H-4 in the segment A/B corridor.



Figure 1 - I-75 Express Lanes Corridor Projects

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1. INTRODUCTION

The I-75 corridor runs through a densely populated and rapidly growing area of south Florida. This corridor currently accommodates 110,000 vehicles per day, approximately 70 percent of the traffic projection of 159,000 vehicles per day by 2037 per the project's environmental assessment². Several planning studies conducted by the Florida Department of Transportation (FDOT) over the years have looked for viable cost-effective solutions to alleviate daily traffic congestion, increase traffic capacity, and provide a construction scheme with minimal impact on existing traffic. These studies helped create a master plan for the I-75 corridor from north of NW 138 Street in Miami-Dade County to I-595 (Port Everglades Expressway), divided in 4 segments (Fig. 1), including Segment A/B, extending 3.1 miles from NW 170th Street to south of Miramar Parkway.

2. GEOMETRIC CONFIGURATION

2.1 Corridor Geometry and Configuration

The master I-75 express lanes corridor totaled 15-miles from north of NW 138 Street in Miami-Dade County to I-595 (Port Everglades Expressway) in Broward County. The new corridor was completed in four segments. Segment A/B is the largest and most complex segment of the heavily traveled I-75 corridor, extending approximately 3.1-miles from

NW 170th Street to south of Miramar Parkway. This segment added two tolled lanes each direction constructed within the existing median in addition to entrance and exit access points, and ramps between the new express lanes and major transportation facilities in south Florida like the Homestead Extension of Florida's Turnpike (HEFT), Miami Gardens Interchange and Miramar Parkway.

One of the key ramps in the Segment A/B corridor is Ramp H-4, an elevated flyover crossing over the I-75 southbound general-purpose lanes, connecting the southbound express lanes (located in the existing median) to a southbound exit on the west side of the HEFT. This traffic movement generated a complex ramp geometry comprised of a reverse