

CORRIDOR DESIGN BRIEF · PROJECT FACT SHEET

Interstate 4 (SR 400) at State Road 434 Interchange Reconstruction & Mainline Widening

A 2.4-mile mainline segment centered on the SR 434 (Longwood / Altamonte Springs) interchange: three-to-four general-use lane widening and conversion to a diverging diamond interchange.

I-4	SR 400	SEMINOLE COUNTY	FDOT DISTRICT FIVE	MP 91.6 → MP 94.0
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CORRIDOR LENGTH 2.4 mi MP 91.6 – 94.0	IMPROVEMENT 3 → 4 lanes each direction	INTERCHANGE FORM Diamond → DDI diverging diamond	DESIGN YEAR 2050 design horizon
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AT A GLANCE

The project widens I-4 from **three to four general-use lanes** in each direction and reconstructs the SR 434 interchange as a **diverging diamond**, holding the improvement within the existing **300-ft right-of-way** by carrying the added lane to the median side. Together the two moves relieve a mainline bottleneck, cut interchange conflict points, and restore lane continuity through Seminole County for the 2050 design year.

PREPARED BY

Kaldune

FINANCIAL PROJECT ID · REPRESENTATIVE, DEMONSTRATION PIECE
FOLLOWING COMPLETION OF THE PD&E STUDY · SEMINOLE COUNTY, FL

SECTION 01

Purpose & Need

The Interstate 4 corridor through Seminole County connects regional through traffic between Orlando and the I-4 / I-95 system to the northeast with the heavy commuter volumes that serve Altamonte Springs, Longwood, and the SR 434 employment and retail corridor. Within the project limits, I-4 currently operates with three general-use lanes in each direction, and the SR 434 interchange is a conventional diamond with signalized ramp terminals.

The corridor within the project limits does not meet the Department's operational and safety objectives for the 2050 design year. Three conditions establish the need for improvement.

01

Capacity & Operations

Existing (2024) mainline AADT within the limits is ≈178,000 vpd; the adopted regional model projects ≈241,000 vpd by 2050, a 35% increase. The segment operates at LOS E in the weekday PM peak today and is projected at LOS F throughout the extended peak with no improvement. SR 434 ramp-terminal queuing spills back onto the mainline during peaks.

02

Safety

The SR 434 ramp terminals and interchange influence area account for a disproportionate share of corridor crashes, with left-turn and rear-end crashes at the signalized terminals the predominant types. The conventional diamond presents left-turn movements across opposing through traffic at both ramp terminals.

03

System Continuity

The three-lane mainline section is a bottleneck between adjacent four-lane general-use sections to the north and south, concentrating congestion and merge / diverge conflict at the segment ends, a discontinuity in the general-use lane section through Seminole County.

PROJECT PURPOSE

To increase mainline capacity, reduce recurring congestion and crash frequency at the SR 434 interchange, and restore continuity of the general-use lane section through Seminole County for the 2050 design year, moving people and communities through the corridor more safely and reliably.

SECTION 02

Design Intent

The proposed improvement widens I-4 within the project limits from three to four general-use lanes in each direction and reconstructs the SR 434 interchange from a conventional diamond to a **diverging diamond interchange (DDI)**.

MAINLINE

Add one general-use lane each direction, carried on the median (inside) side to hold the existing outside edge and minimize outside ROW impact. Four 12-ft lanes, full inside and outside shoulders, and a median configured for a future managed-lane conversion without further widening.

INTERCHANGE

Convert the ramp terminals to a diverging diamond. The DDI shifts SR 434 traffic to the left between terminals, eliminating the left-turn-across-opposing movement onto the on-ramps and reducing conflict points. Terminals signalize at two phases rather than multi-phase operation.

MULTIMODAL

The reconstructed SR 434 crossover carries a protected pedestrian and bicycle path through the median island, separated from vehicular movements, per the Department's Complete Streets policy.

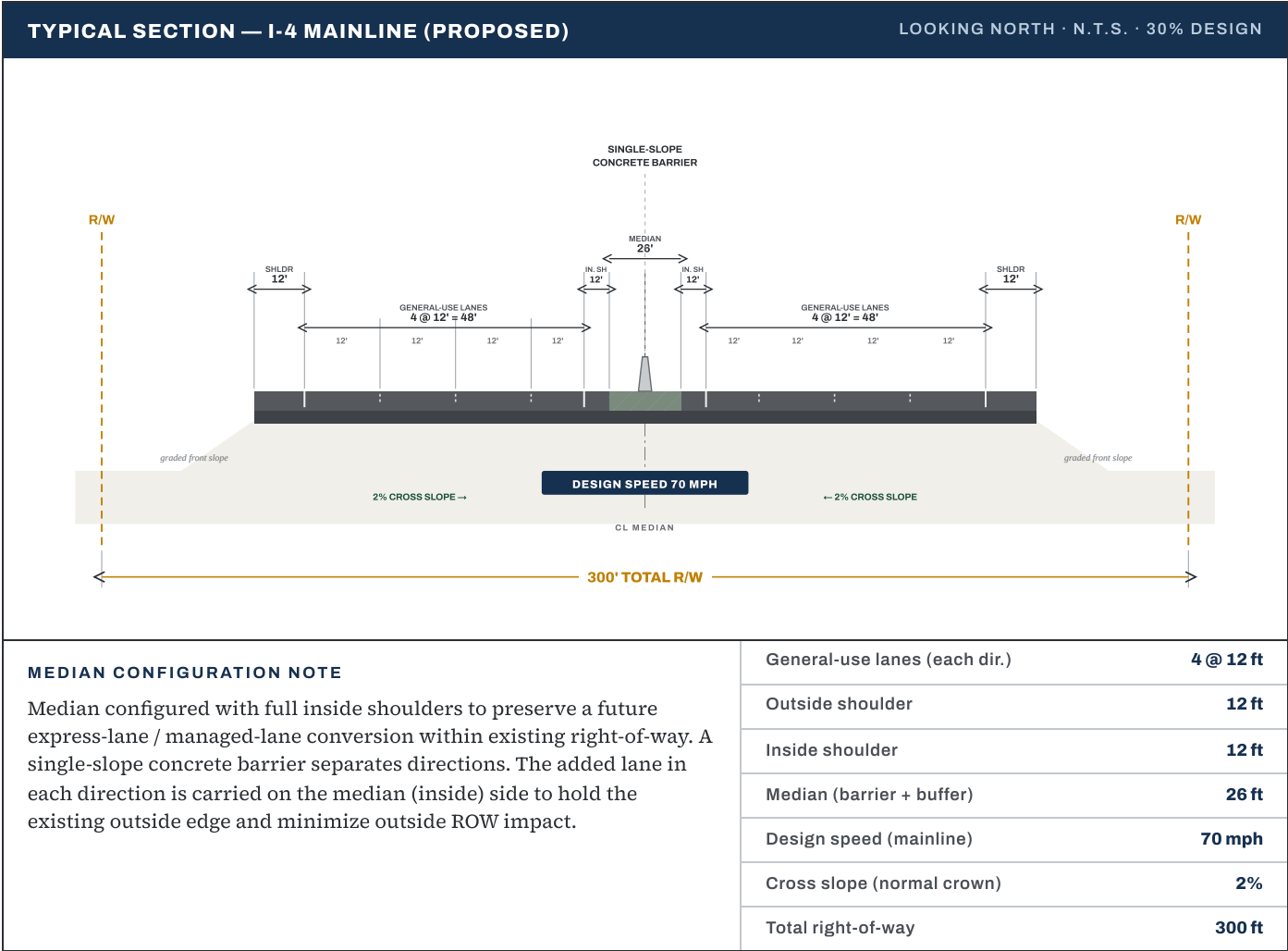
RIGHT-OF-WAY

Developed to hold the improvement within existing ROW to the extent practicable, widening to the median side. Limited additional ROW is anticipated at the interchange quadrants for ramp regrading and stormwater.

SECTION 03 · ROADWAY CROSS-SECTION

Proposed Typical Section

I-4 mainline, proposed condition, looking north, at a station representative of mid-segment, away from the interchange. Section is symmetric about the median centerline; dimensions shown are per the 30% design typical section. Not to scale.



EXISTING TYPICAL SECTION — FOR COMPARISON

The existing mainline carries three 12-ft general-use lanes per direction with a 10-ft outside shoulder, a 4-ft inside shoulder, and a depressed grass median with guardrail, at design speed 70 mph. The proposed section adds the fourth lane on the median side and rebuilds the median as a barrier-separated section with full inside shoulders, holding the outside edge and the 300-ft right-of-way.

Vertical clearance at the reconstructed SR 434 overpass structure is maintained at a **16.5 ft** minimum over the mainline.



SECTION 04 · PROJECT DATA

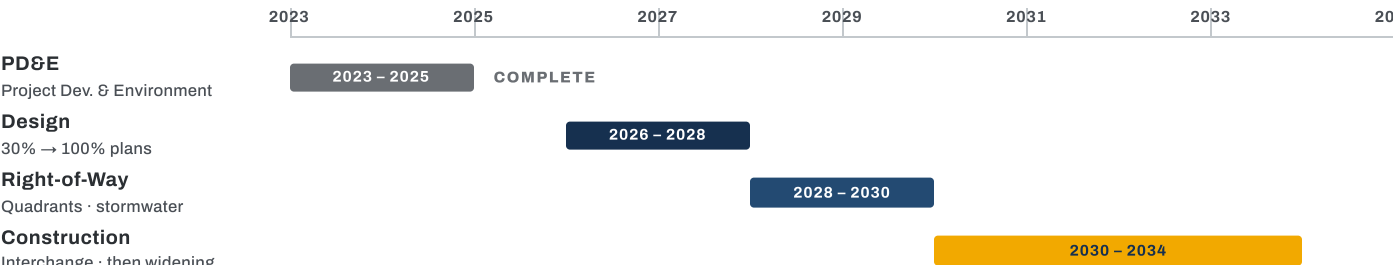
The Numbers

METRIC	EXISTING	PROPOSED / DESIGN YEAR 2050
General-use through lanes (each direction)	3	4
Lane width	12 ft	12 ft
Outside shoulder	10 ft	12 ft
Inside shoulder	4 ft	12 ft
Median	Depressed grass, guardrail	Single-slope barrier, 26 ft
Design speed (mainline)	70 mph	70 mph
Mainline AADT	≈178,000 (2024)	≈241,000 (2050)
Mainline LOS (PM peak)	LOS E	LOS D (build) / F (no-build)
SR 434 interchange form	Conventional diamond	Diverging diamond (DDI)
Right-of-way width	300 ft	300 ft (median-side)
Total crash reduction (interchange)	—	≈33% CMF 0.67
Injury crash reduction (interchange)	—	≈41% CMF 0.59
Estimated construction cost	—	\$185M – \$220M

Crash-reduction basis. Figures reflect published FHWA crash modification factors for conversion of a conventional diamond interchange to a diverging diamond: CMF 0.67 for total crashes (≈33% reduction) and CMF 0.59 for injury crashes (≈41% reduction), per the FHWA DDI safety evaluation, applied here illustratively to characterize expected safety performance. **AADT / LOS basis.** Traffic projections are representative of the corridor's regional travel-demand context; the 2050 design-year volume reflects an illustrative 35% growth over existing conditions. Level of Service is reported on the HCM / FDOT A–F scale for the PM peak.

SECTION 05 · PROJECT DEVELOPMENT

Schedule & Phasing



Design and right-of-way phases overlap. Construction is anticipated in two segments. The SR 434 diverging diamond is advanced first to relieve the primary bottleneck, followed by mainline widening through the segment. Maintenance of traffic maintains three general-use lanes per direction on the mainline throughout construction. *Durations and year ranges are illustrative of the genre and the corridor's scale.*

ABOUT THIS DELIVERABLE

The engineering is yours. The production is ours.

This corridor brief is a demonstration. The engineering substance of a real project comes from your engineers: the purpose and need, the typical section, the design-year numbers, the phasing. Kaldune absorbs the **production**, the information design, the dimensioned drawing craft, the rendered aerial, the district-ready layout. Substance in, a finished deliverable at your bar out, in days, without pulling an engineer off the technical work.

01 Reads like your house made it Restrained engineering register, a real grid, typographic data blocks, agency-appropriate palette. Not a brochure, not a slide deck: a deliverable a district reviewer recognizes on sight.	02 Drawings authored, not clip-art Typical sections, dimensioned cross-sections, and phasing built as clean vector, with real callouts, witness lines, and arrowheads, the way a plan sheet does it.
03 Rendered visualization on call Aerials and corridor visualizations at an infrastructure-render bar, composed into the deliverable rather than dropped beside it.	04 Turnaround measured in days Production capacity that scales with your pursuit and submittal calendar. You hold the engineering; we hold the deadline on the designed artifact.

DEMONSTRATION NOTICE

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