

Problem Statement

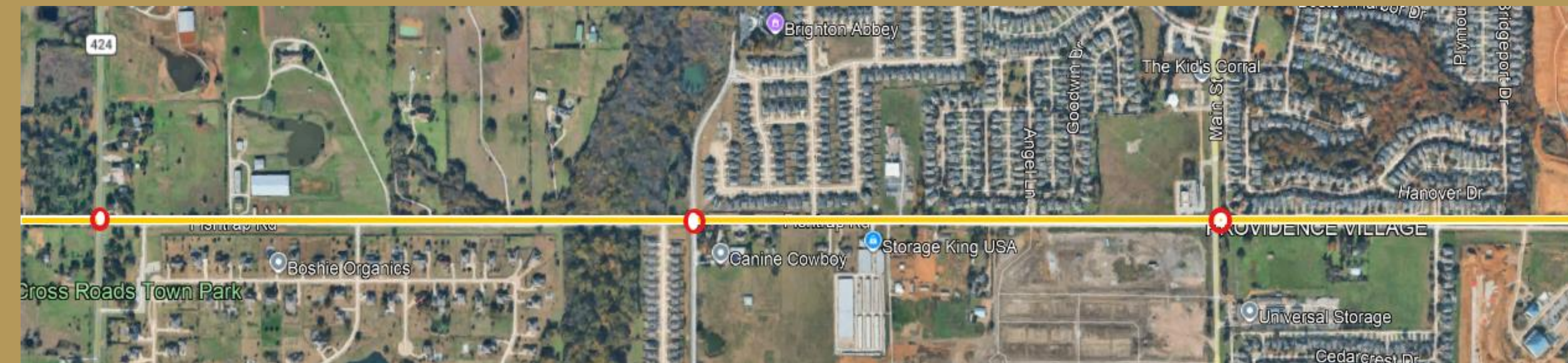
Rapid residential growth in Providence Village has increased traffic on Fishtrap Road to an AADT > 11,000 vehicles per day on a roadway classified as a local street. This has created severe congestion and safety concerns at three key intersections:

- FM 424 (signalized)
- Oak Grove Lane (4-way stop)
- FM 2931 / Main Street (signalized)

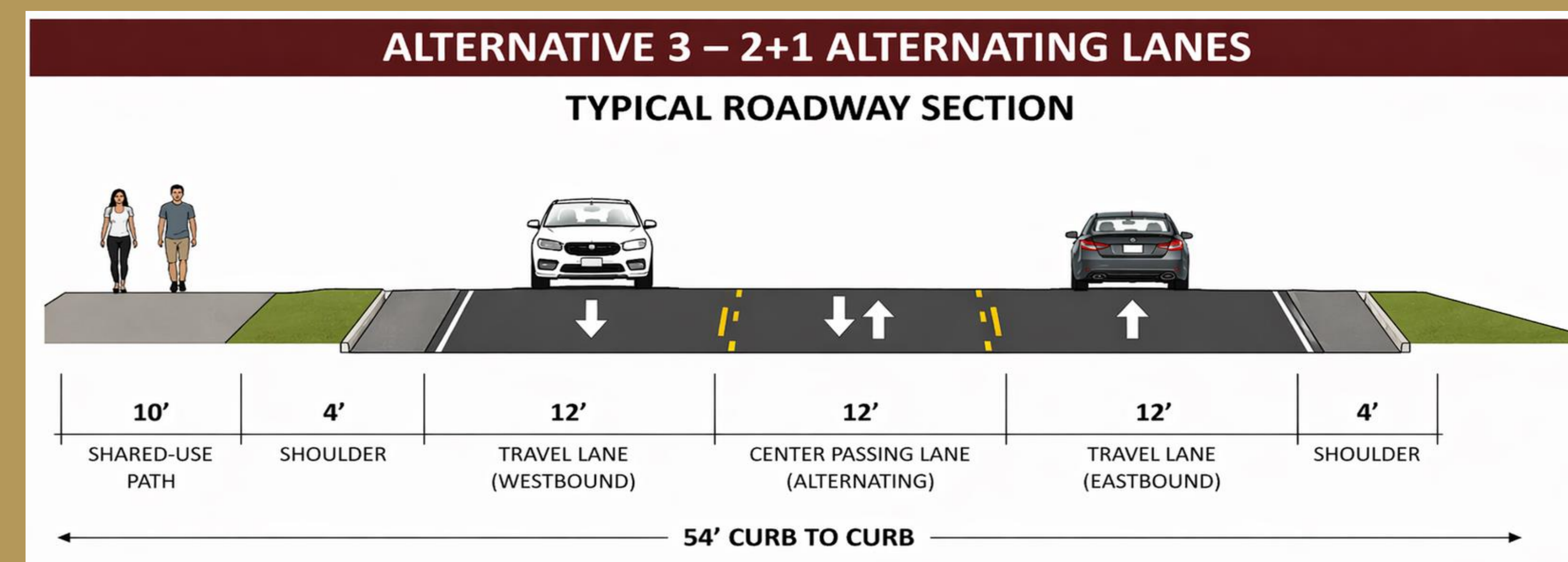
The project requires widening ≈2 miles of Fishtrap Road and improving the intersections while minimizing right-of-way (ROW), utility relocations, and environmental impacts at the creek crossing.

Engineering Solution

Existing Roadway Aerial



2+1 Alternating Lanes Typical Section Proposal



Sustainability Evaluation

Envision – Platinum Rating
Score: 71%



Credit Category	Applicable	Submitted	Percentage
Quality of Life	188	183	97%
Leadership	74	78	105%
Resource Allocation	196	70	36%
Natural World	82	48	59%
Climate & Resilience	90	69	77%
Total Points / %	630	448	71%

Alternative Considered

During this project we began by considering 3 Different Alternatives:

- **Alternative 1 – Minimal Widening**
2-lane roadway with shoulders, and single-lane roundabout at Int #2, and shared-use pathway.
- **Alternative 2 – Widening + Painted Median**
3-lane roadway with continuous two-way left-turn lane (TWLTL), roundabout at Int #2, and shared-use pathway.
- **Alternative 3 – 2+1 Alternating Lanes**
Directional alternating passing lanes, TWLTL at Int #1 and Int #3, roundabout at Int #2, and shared-use pathway.

Although each of these solutions offer great benefits, We decided to move forward with 2+1 Alternating Lanes alternative due to the ability meet needs and present best value.

Design Considerations

- Increase Safety
- Improve Traffic Flow
- Create Safe Multimodal Travel
- Community Accessibility

Summary Cost

Capital Costs

Item Description	Unit	Unit Price	Qty	Total
Removals (Asphalt/Base)	SY	\$13.80	28,160	\$389,000
Asphalt Pavement	SY	\$110	51,630	\$5,679,000
Concrete Curb & Gutter	LF	\$35	12,000	\$420,000
Shared-Use Pathway (10-ft)	LF	\$96	10,000	\$960,000
Earthwork / Excavation	CY	\$20	30,000	\$600,000
Traffic Signals (2 intersections)	EA	\$320,000	2	\$640,000
Single-Lane Roundabout	EA	\$850,000	1	\$850,000
Striping, Signage & Markings	LS	–	–	\$420,000
Subtotal Direct Costs	–	–	–	\$9,958,000
Mobilization (8%)	LS	–	–	\$796,640
Contingency (25%)	LS	–	–	\$2,489,500
Total OPCC	–	–	–	\$13,244,140

Life Cycle Cost

Cost Component	Alt 3
Initial Capital Cost	\$13.25M
NPV – Routine Annual Maintenance	\$2.10M
NPV – Periodic Rehabilitation (Mill & Overlay every 15 yrs)	\$4.00M
NPV – Major Replacement (pavement/roundabout)	\$1.70M
Total NPV	\$21.05M

Constraints and Standards

- TxDOT Roadway Design Manual
- TxDOT Traffic Standards
- TxDOT Bid Average Cost Dashboard
- Envision Sustainability Rating System

Group Photo

