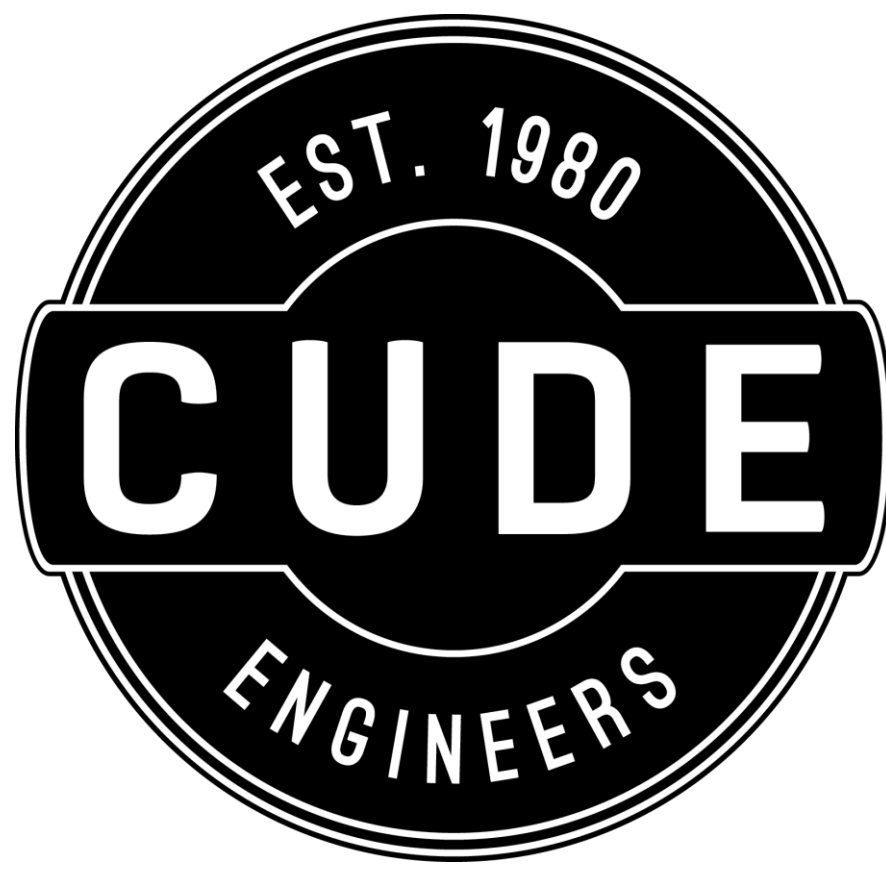


Group # C1.05

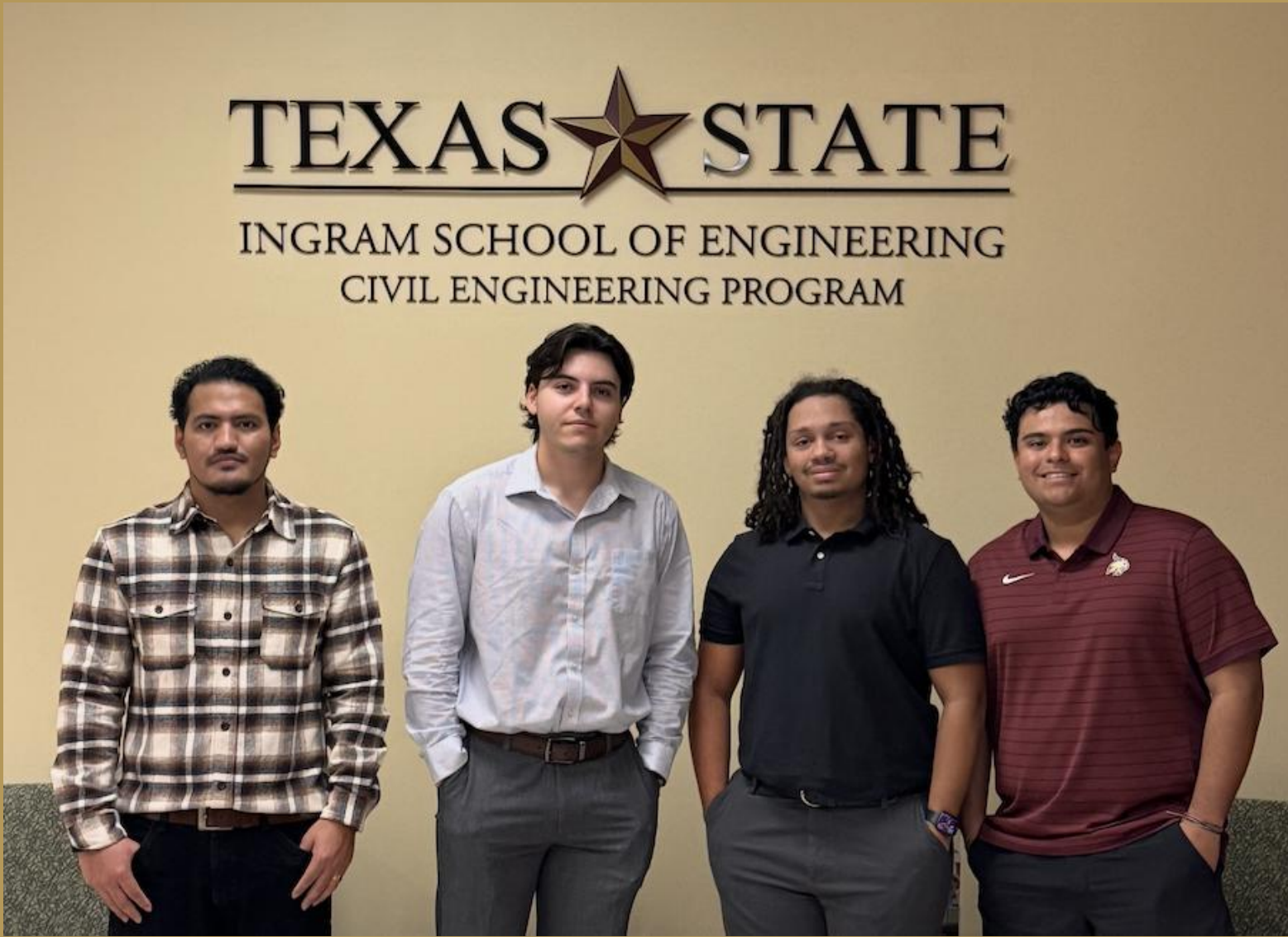
Jesse Manchaca, Spencer Haynes, Adhish Shahi, Sebastian Delgado

Sponsored By: CUDE Engineers



MADE BY AI

Team Members



Sustainability Overview

Credit Category	Submitted Score Information		
	Applicable	Submitted	Percentage
Quality of Life	182	36	20%
Leadership	170	29	17%
Resource Allocation	184	33	18%
Natural World	212	35	17%
Climate and Resilience	190	70	37%
Total Points / %	938	203	22%

Total Applicable Points: 938

Points Earned: 203

Overall Score: 22%

Second Semester Plan

- Final hydrology & hydraulic calculations
- Storm sewer sizing and inlet placement
- Water & wastewater final design package
- Construction phasing and schedule
- Final presentation and deliverables

Project Overview

Site Location: Seguin Texas

Goal: Develop a single-family subdivision that complies with all City of Seguin Requirements

Scope: Subdivision layout design of a 10-Acre lot

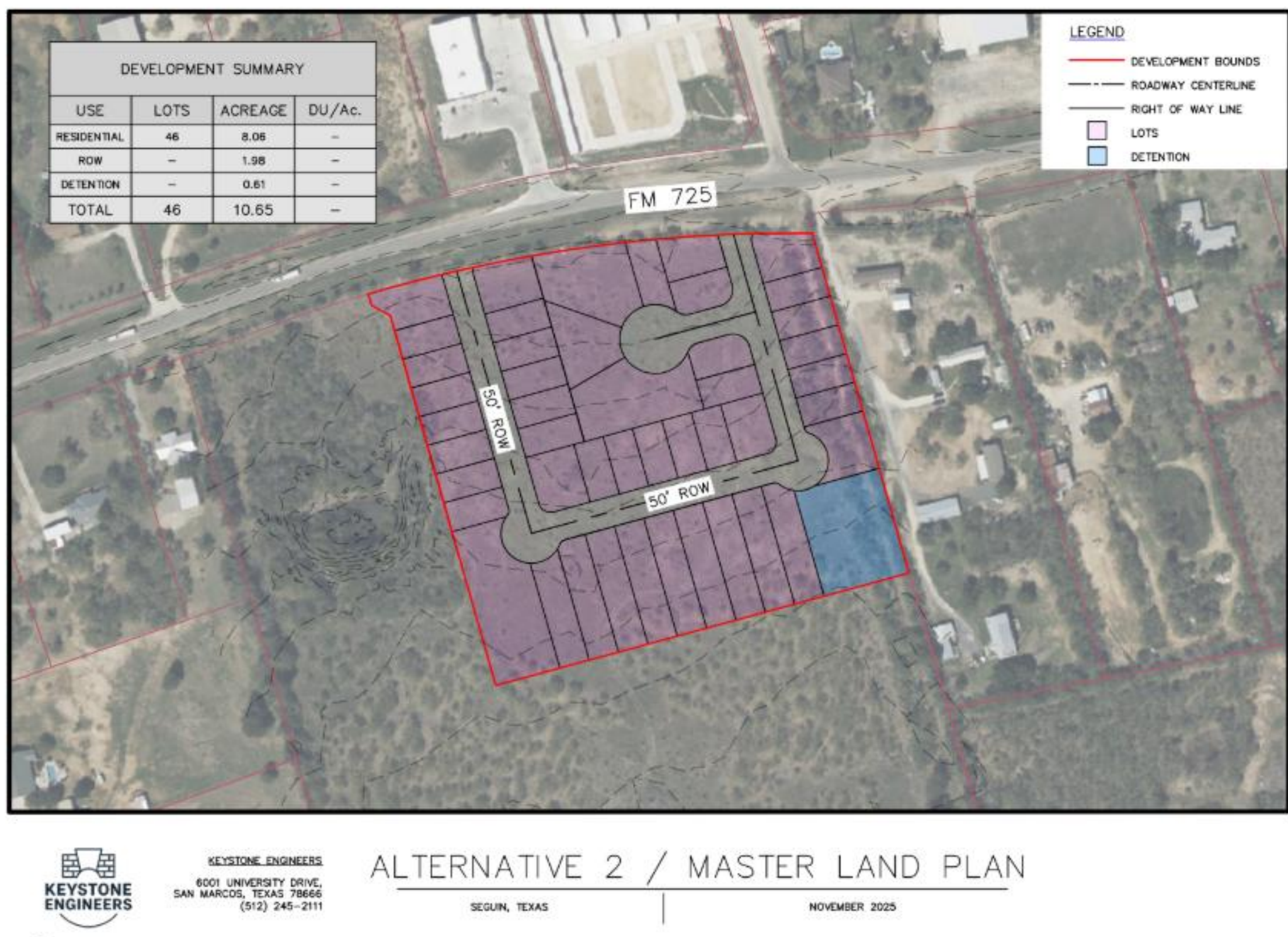
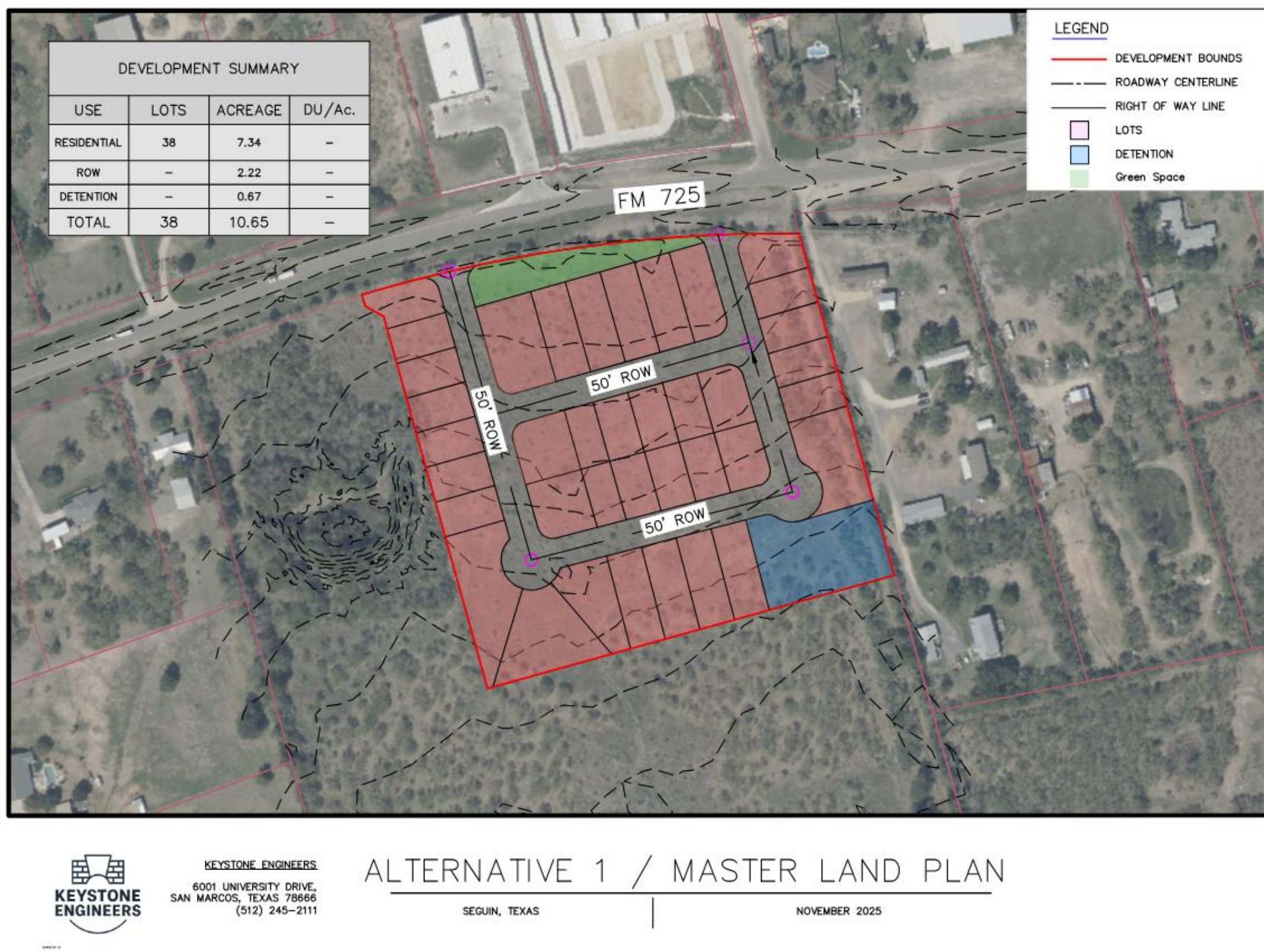
Constraints and Standards

- Topography and drainage patterns
- Floodplain and stormwater regulations
- Roadway and fire access (2018 IFC)
- Water and sewer service accessibility
- City of Seguin UDC requirements
- Right-of-way and lot dimensional requirements
- Utility availability (water, wastewater, electric)

Overview

- 50’ ROW with 30’ pavement
- Two access points onto FM 725
- Efficient grading aligned with natural slopes
- Detention pond located at natural low point

Master Land Plans



Cost Analysis

Item	Description / RS Means Line	Quantity	Unit	Unit Cost (O&P)	Total Cost
Asphalt Paving	Plant-mix asphalt paving, wearing course, 5" thick	6,818	SY	\$76.35 / SY	\$520,357
Aggregate Base Course	10" Aggregate Base Course, Compacted (3/4" Crushed Stone)	6,818	SY	\$16.28 / SY	\$110,997
Sidewalk	Asphaltic concrete sidewalk pavement, 4" thick	3,573	SY	\$12.05 / SY	\$43,055
Curb & Gutter	Cast-in-place concrete curb & gutter, 6" x 18" straight	3,697	LF	\$12.73 / LF	\$47,063
Storm Drainage	15-Inch Reinforced Concrete Pipe (RCP), Class 3	2,257	LF	\$34.39 / LF	\$77,618
Detention Pond Excavation	Mass excavation, common earth, Crew B14G (7 CY bucket)	4,312	CY	\$0.50 / CY	\$2,156

Total Capital Cost = \$1,270,249

Year	Maintenance (\$)	Rehab (\$)	Total Cost (\$)	Discount Factor	Present Value (\$)
0	--	--	801,246	1.000	801,246
10	40,062	130,089	170,152	0.744	126,609
20	40,062	130,089	170,152	0.554	94,209
30	40,062	130,089	170,152	0.412	70,100
40	40,062	130,089	170,152	0.307	52,161
50	40,062	130,089	170,152	0.228	38,813
60	40,062	130,089	170,152	0.170	28,880
70	40,062	130,089	170,152	0.126	21,490
80	40,062	130,089	170,152	0.094	15,990
90	40,062	130,089	170,152	0.070	11,898

Total Lifecycle Cost = \$801,246

Item	Description / RS Means Line	Quantity	Unit	Unit Cost (O&P)	Total Cost
Asphalt Paving	Plant-mix asphalt paving, wearing course, 5" thick	6,369	SY	\$76.35 / SY	\$486,273
Aggregate Base Course	10" Aggregate Base Course, Compacted (3/4" Crushed Stone)	6,369	SY	\$16.28 / SY	\$103,687
Sidewalk	Asphaltic concrete sidewalk pavement, 4" thick	3,329	SY	\$12.05 / SY	\$40,114
Curb & Gutter	Cast-in-place concrete curb & gutter, 6" x 18" straight	1,440	LF	\$12.73 / LF	\$18,331
Storm Drainage	15-Inch Reinforced Concrete Pipe (RCP), Class 3	3476	LF	\$34.39 / LF	\$119,539
Detention Pond Excavation	Mass excavation, common earth, Crew B14G (7 CY bucket)	4,786	CY	\$0.50 / CY	\$2,393

Total Capital Cost = \$1,209,872

Year	Maintenance (\$)	Rehab (\$)	Total Cost (\$)	Discount Factor (3%)	Present Value (\$)
0	-	-	768,824	1.000	768,824
10	38,441	121,568	160,009	0.744	119,062
20	38,441	121,568	160,009	0.554	88,593
30	38,441	121,568	160,009	0.412	65,922
40	38,441	121,568	160,009	0.307	49,052
50	38,441	121,568	160,009	0.228	36,499
60	38,441	121,568	160,009	0.170	27,159
70	38,441	121,568	160,009	0.126	20,209
80	38,441	121,568	160,009	0.094	15,037
90	38,441	121,568	160,009	0.070	11,189
100	38,441	121,568	160,009	0.052	8,326

Total Lifecycle Cost = \$768,824