

C1.05 – High Performance Box Culvert Bridge

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 TxDOT

Team

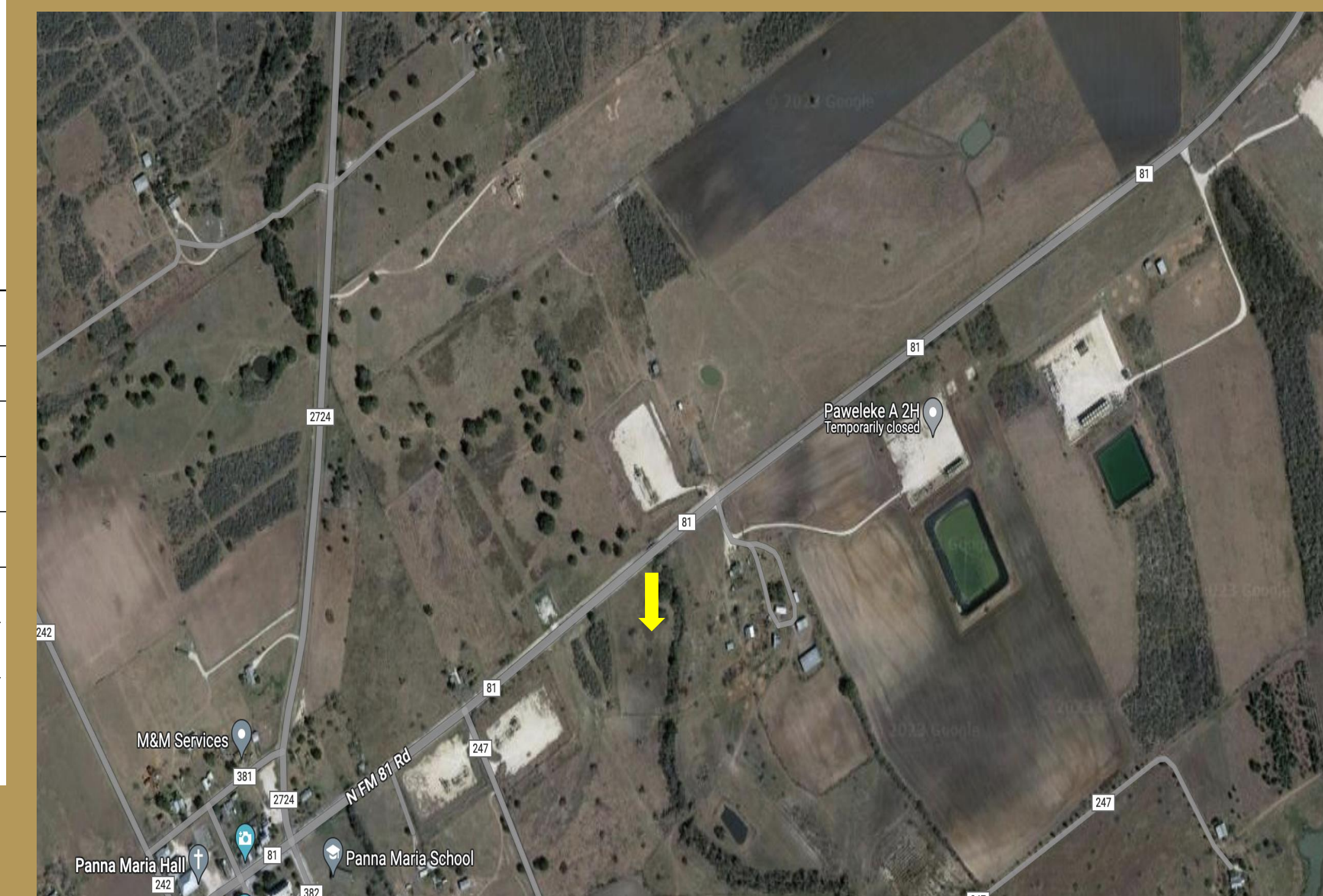
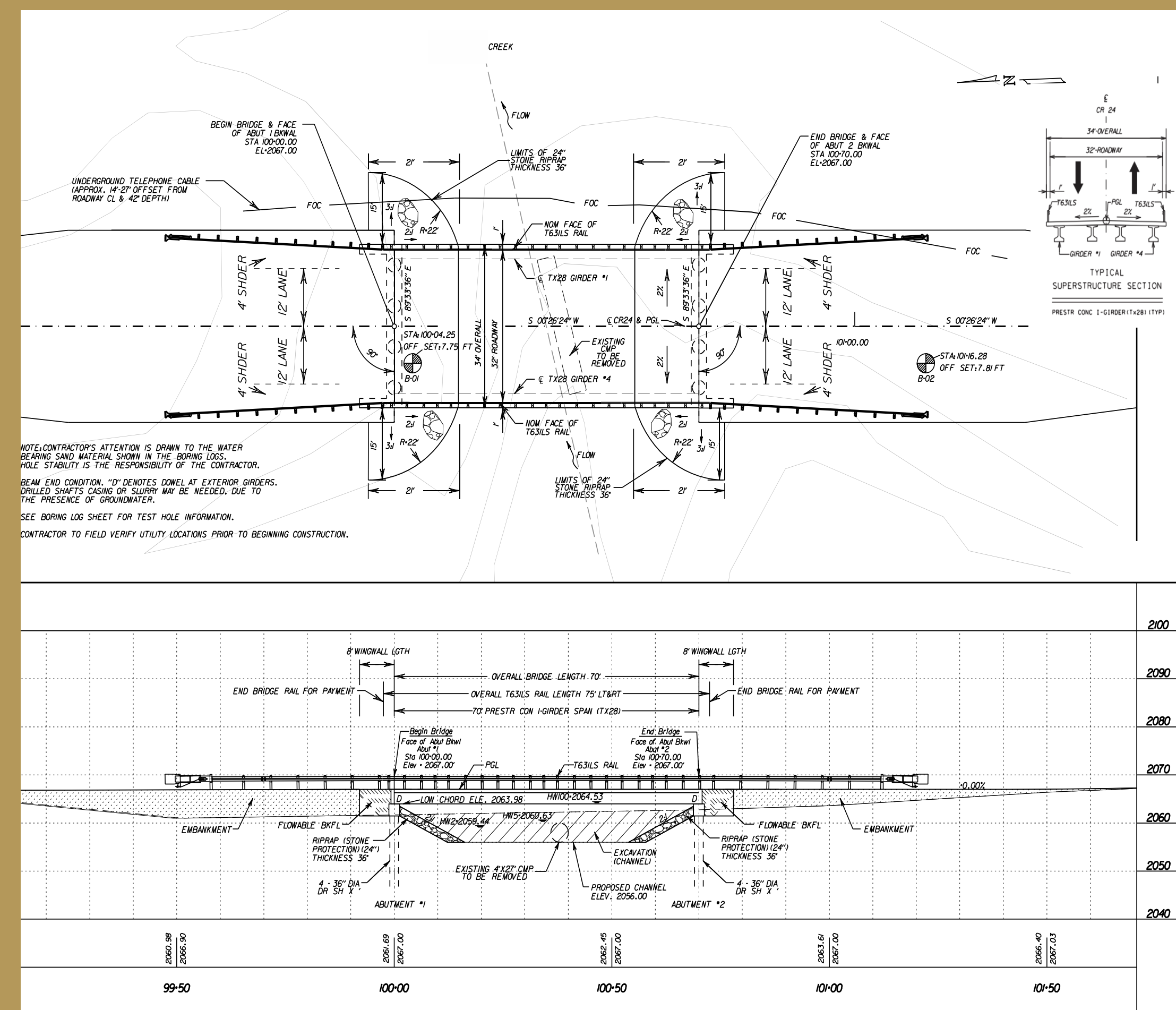


Summary of Problem

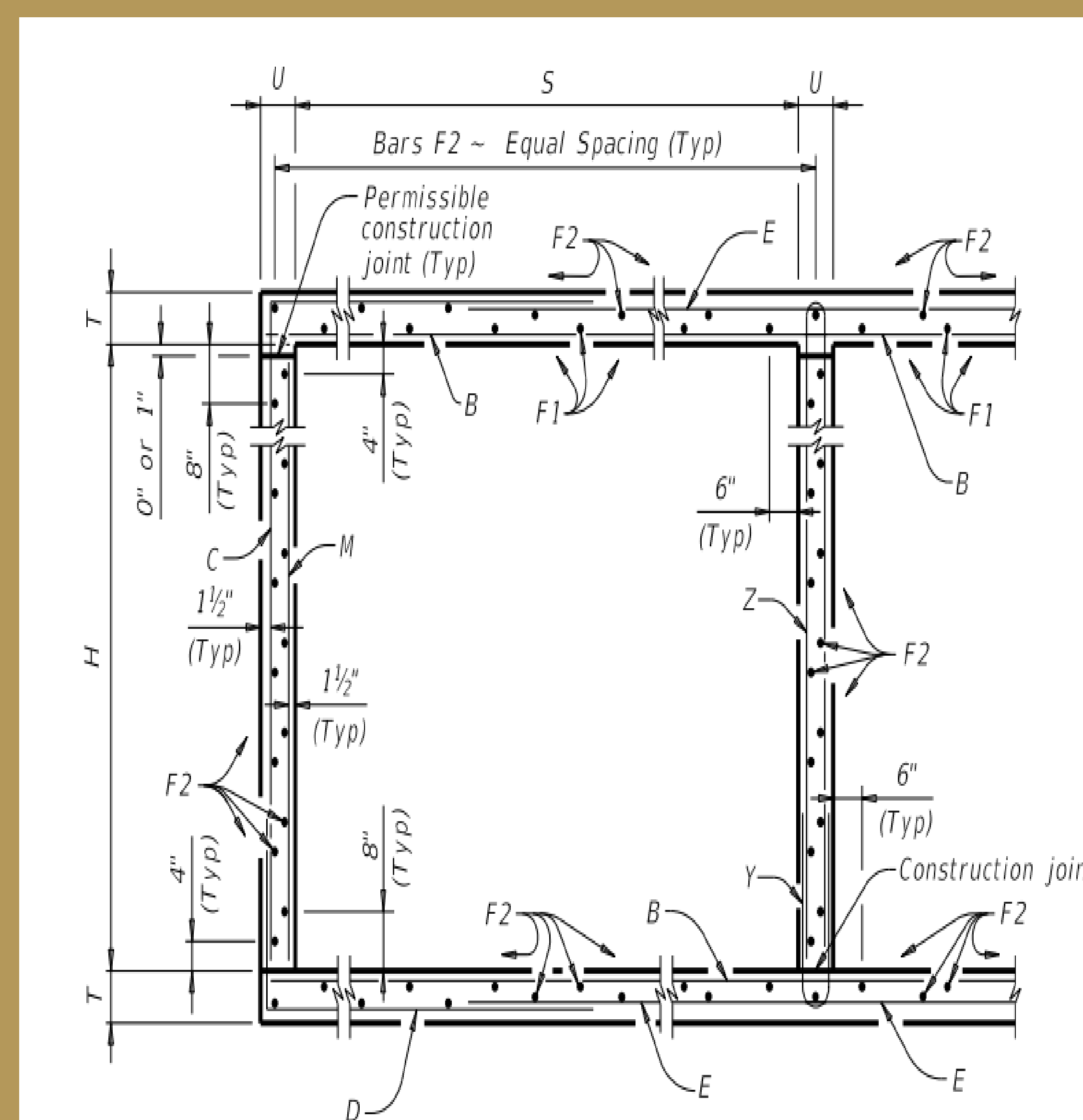
TxDOT supplied bridge plans that required a redesign for a proposed channel extension due to hydraulic performance complications with the corrugated metal pipe that's in place. Our mission is to research and provide alternatives that suffice the needed requirements.

Project Information

These are the original TxDOT bridge design plans that were proposed. The location of our bridge is N FM 81 Rd Hobson Tx.



Alternatives



- The first alternative is a multiple box culvert using 6 separate boxes with spans of 8-10 feet each.
- For our second alternative, we decided to change the material composition to high-performance concrete.
- The alternative that we selected is a combination of box culverts and the implementation of high-performance concrete

Sustainability Evaluation

Credit Category	Envision Grading		Score
	Available	Earned	Percent
Quality of Life	96	84	88
Leadership	132	103	78
Resource Allocation	162	39	24
Natural World	200	154	77
Climate & Resilience	190	62	33
Total Points / %	780	442	57

Capital and Life Cycle Cost

Materials	Cost (\$)
Rails	\$23,000.00
Box Culvert	\$62,000.00
Road Slab	\$35,000.00
Wing Walls	\$28,000.00
Constrction	\$73,000.00
Intial Cost	\$221,000.00
Net Present Value (NPV)/ Life Cycle Cost	
Initial Cost	\$223,000.00
Maintenance Cost	\$18,000.00
Rehabilitation Cost	\$279,000.00
Total	\$517,000.00