

City of Grand Prairie
 Great Southwest Parkway Schematic and Noise Wall Study & Design
 Half Associates P47512

Task	QAQC	Civil/Project Manager				Structural		H&H			Environmental				Nat Rsc		Landscape			Survey				Total Hours	Labor Subtotal	Direct Expenses Subtotal	Total Fee	Total Rounded Fee	
	Project QAQC	Sr. Project Manager	Civil Engineer II	Civil EIT	CADD Tech	Senior Structural Engineer	Structural Engineer	Senior H&H Engineer	H&H - PE Engineer	H&H - EIT Engineer	ENV PM/QC Manager	Sr. ENV Scientist	Mid ENV Scientist	Jr. ENV Scientist	Sr. ENV Scientist	Mid ENV Scientist	Landscape IV	Landscape III	Landscape I	Senior RPLS	Survey Technician	2-Man Survey Crew	Clerical						
	\$265.00	\$253.61	\$151.44	\$124.07	\$143.00	\$183.06	\$133.19	\$250.00	\$162.00	\$138.00	\$203.50	\$154.00	\$132.00	\$99.00	\$266.85	\$139.02	\$204.01	\$171.66	\$93.05	\$258.50	\$137.50	\$198.00	\$90.00						
1. Project Administration	20.00	34.00	68.00	54.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	180.00	\$ 31,492.01	\$ -	\$ 31,492.01	\$ 31,500.00	
Project Meetings (up to 5)		16.00	20.00	10.00																				46.00	\$ 8,327.11				
Field Reconnaissance (up to 3)		8.00	16.00	24.00																				48.00	\$ 7,429.49				
Monthly Reports and Billing		4.00	12.00																					16.00	\$ 2,831.66				
Team Coordination		6.00	20.00	20.00	4.00																			50.00	\$ 7,603.75				
QAQC Reviews (30%, 60% and 90% and 100%)	20.00																							20.00	\$ 5,300.00				
2. Design Surveys	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.50	44.00	84.00	0.00	134.50	\$ 24,093.39		\$ 24,093.39	\$ 24,100.00		
Verify/Establish Control																				1.00	4.00	20.00		25.00	\$ 4,768.50				
Research (deed, flood, zoning, standards)																					2.00			2.00	\$ 275.00				
Boundary Search																						20.00		20.00	\$ 3,960.00				
Boundary Analysis & Solution																				3.00	8.00			11.00	\$ 1,875.50				
Topography																						32.00		32.00	\$ 6,336.00				
Field Data Processing																					6.00			6.00	\$ 825.00				
COGO, sketches, survey requests				2.00																				16.00	\$ 2,448.14				
Process data for Topo																					6.00			6.00	\$ 825.00				
Borehole Staking																					0.50	4.00		4.50	\$ 860.75				
Supplemental Survey																				0.50	1.50	8.00		10.00	\$ 1,919.50				
3. Geotechnical Engineering (CMJ Engineering)																											\$ 7,138.00	\$ 7,138.00	\$ 7,200.00
4. Schematic Preparation	0.00	3.00	16.00	64.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	108.00	\$ 15,797.94	\$ 200.00	\$ 15,997.94	\$ 16,000.00	
Develop Schematic		2.00	8.00	40.00	12.00																			62.00	\$ 8,397.47	\$ 200.00			
Engineer's Opinion on Probable Construction Cost		1.00	8.00	24.00																				33.00	\$ 4,442.76				
Natural Resources Wetland Delineation														4.00										4.00	\$ 1,067.40				
Natural Resources Site Visit															4.00									4.00	\$ 556.07				
Natural Resources Summary Report														5.00										5.00	\$ 1,334.25				
5. Noise Study	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	16.00	40.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00	\$ 9,548.00	\$ 6,800.00	\$ 16,348.00	\$ 16,400.00	
NAPSCI Proposal																											\$ 6,800.00		
Half Assistance											4.00	16.00	40.00	10.00										70.00	\$ 9,548.00				
6a. Public Meeting 1 (After Schematic)	0.00	4.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	12.00	46.00	68.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	158.00	\$ 19,631.47	\$ 12,788.50	\$ 32,419.97	\$ 32,500.00	
Public Meeting (See following page for direct expense details)		4.00	8.00	8.00							6.00	12.00	46.00	68.00									6.00	158.00	\$ 19,631.47	\$ 12,788.50			
6b. Public Meeting 2 (After 90% PS&E)	0.00	4.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	12.00	46.00	68.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	158.00	\$ 19,631.47	\$ 12,788.50	\$ 32,419.97	\$ 32,500.00	
Public Meeting (See following page for direct expense details)		4.00	8.00	8.00							6.00	12.00	46.00	68.00									6.00	158.00	\$ 19,631.47	\$ 12,788.50			
7. Drainage Study and Downstream Assessment	12.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	26.00	166.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	210.00	\$ 31,800.00	\$ -	\$ 31,800.00	\$ 31,800.00	
Hydrologic Analysis								1.00	6.00	32.00														39.00	\$ 5,638.00				
Hydraulic Analysis	4.00							1.00	8.00	60.00														73.00	\$ 10,886.00				
Downstream Assessment	4.00							2.00	4.00	24.00														34.00	\$ 5,520.00				
Drainage Study Report	4.00							2.00	8.00	50.00														64.00	\$ 9,756.00				
8. Drainage Alternative Feasibility Study	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	10.00	48.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	\$ 8,744.00	\$ -	\$ 8,744.00	\$ 8,800.00	
Detention Alternative Analysis								1.00	6.00	24.00														31.00	\$ 4,534.00				
Future Storm Drain Diversion								1.00	4.00	24.00														29.00	\$ 4,210.00				
9. Noise Wall Aesthetic Study and Design	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.00	128.00	112.00	0.00	0.00	0.00	0.00	304.00	\$ 45,450.72	\$ -	\$ 45,450.72	\$ 45,500.00	
Project Management and Meetings																	24.00	48.00	32.00						104.00	\$ 16,113.52			
Schematic Design																	40.00	80.00	80.00						200.00	\$ 29,337.20			

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	Project QAQC Manager	Sr. Project Manager	Civil Engineer II	Civil EIT	CADD Tech	Senior Structural Engineer	Structural Engineer	Senior H&H Engineer	H&H - PE Engineer	H&H - EIT Engineer	ENV PM/QC Manager	Sr. ENV Scientist	Mid ENV Scientist	Jr. ENV Scientist	Sr. ENV Scientist	Mid ENV Scientist	Landscape IV	Landscape III	Landscape I	Senior RPLS	Survey Technician	2-Man Survey Crew	Clerical							
10. Construction Plan Preparation	0.00	26.00	107.00	188.00	41.00	183.06	310.00	250.00	162.00	138.00	203.50	154.00	132.00	99.00	266.85	139.02	204.01	171.66	93.05	258.50	137.50	198.00	90.00	784.00	\$ 111,729.32	\$ 2,500.00	\$ 114,229.32	\$ 114,300.00		
Cover Sheet and Index		0.50	1.00		2.00																		16.00	19.50	\$ 2,004.24	\$ 2,000.00				
Project Layout and Survey Control		0.50	2.00	8.00	4.00																			14.50	\$ 1,994.23					
General Notes and Legend		2.00	8.00		4.00																			14.00	\$ 2,290.71					
Removal Plan		1.00	4.00	12.00	4.00																			21.00	\$ 2,920.18					
Ditch Plan and Profile		1.00	8.00	24.00	4.00																			37.00	\$ 5,014.76					
Grading Plan		1.00	8.00	24.00	4.00																			37.00	\$ 5,014.76					
Noise Wall Plan and Profile, Sections, General Notes and Details		2.00	8.00			90.00	310.00																	410.00	\$ 59,482.57					
Noise Wall Aesthetic Plans (see Item 9)																								0.00	\$ -					
Drainage Area Map		2.00	8.00	24.00	2.00																			36.00	\$ 4,982.36					
Drainage Calculations		1.00	12.00	8.00	1.00																			22.00	\$ 3,206.40					
Drainage Plan and Profile		1.00	4.00	8.00	2.00																			15.00	\$ 2,137.91					
Erosion Control Plans		1.00	4.00	8.00	2.00																			15.00	\$ 2,137.91					
City of Grand Prairie Standard Details		2.00	4.00	8.00	4.00																			18.00	\$ 2,677.51					
Miscellaneous Details		2.00	4.00	8.00	4.00																			18.00	\$ 2,677.51					
Ditch and Noise Wall Cross Sections		1.00	8.00	16.00	4.00																			29.00	\$ 4,022.21					
Engineer's Opinion on Probable Construction Cost		4.00	12.00	24.00																				40.00	\$ 5,809.32					
Project Manual		4.00	12.00	16.00																			6.00	38.00	\$ 5,356.77	\$ 500.00				
11. Bidding and Construction	0.00	22.00	47.00	32.00	2.00	24.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	165.00	\$ 26,321.31	\$ 1,400.00	\$ 27,721.31	\$ 27,800.00		
Pre-Bid Meeting		4.00	8.00																				2.00	14.00	\$ 2,405.92	\$ 300.00				
CivCast		1.00	2.00	2.00																				5.00	\$ 804.62	\$ 100.00				
Bid Addendums			4.00	8.00																				12.00	\$ 1,598.30					
Bid Tabulation			1.00	4.00																				5.00	\$ 647.71					
Contractor letter of Recommendation			1.00	4.00																				5.00	\$ 647.71					
Project Document Copies		1.00		2.00	2.00																			5.00	\$ 787.74					
Pre-Construction Meeting		4.00	6.00																					10.00	\$ 1,923.04	\$ 1,000.00				
Site Observation Visits		4.00	8.00	8.00		4.00	4.00																	28.00	\$ 4,483.47					
Review shop drawings and submittals						20.00	32.00																	52.00	\$ 7,923.26					
Change Orders		1.00	2.00	4.00																				7.00	\$ 1,052.76					
Final Walk-through and Punch List		6.00	12.00																					18.00	\$ 3,338.87					
Prepare Acceptance Letter		1.00	3.00																					4.00	\$ 707.92					
12. Right of Way Document Preparation																														
Per Parcel	EA	2.00	3000.00																								\$ -	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00
TOTAL PROJECT COSTS	32.00	93.00	254.00	356.00	59.00	114.00	346.00	8.00	36.00	214.00	16.00	40.00	132.00	146.00	9.00	4.00	64.00	128.00	112.00	4.50	44.00	84.00	36.00	2331.50	\$ 344,239.63	\$ 49,615.00	\$ 393,854.63	\$ 394,400.00		

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Public Meeting Direct Expenses (per EA Public Mtg)	PRICE	QUANTITY	FEE
Personal Automobile Mileage	0.58 / mile	400.00	\$ 232.00
Postage	\$0.55 / letter	250.00	\$ 137.50
Tolls, Parking	\$10.00 / day	4.00	\$ 40.00
Photocopy (b&w, per side, up to 11"x17")	\$0.10 each	600.00	\$ 60.00
Color copy/plot (per side, up to 11" x 17")	\$1.50 each	300.00	\$ 450.00
Presentation Boards 30" by 40" color mounted	145 each	3.00	\$ 435.00
PM Venue	1500.00	1.00	\$ 1,500.00
Meals w/o overnight	36.00	4.00	\$ 144.00
Legal ads	4000.00	2.00	\$ 8,000.00
Security Officer	60/hr	4.00	\$ 240.00
Translation Services	900.00	1.00	\$ 900.00
Equipment Rental	600.00	1.00	\$ 600.00
Supplies for PM	50.00	1.00	\$ 50.00
TOTAL			\$ 12,788.50

HALFF ASSOCIATES, Inc.
4000 Fossil Creek Boulevard
Fort Worth, Texas 76137
(817) 847-1422

CLIENT: City of Grand Prairie
PROJECT: GSW Pkwy Noise Wall Project

6/1/2022
47512

CRG/DAB

ESTIMATE OF PROBABLE CONSTRUCTION COST

Item No.	Description	Unit	Total Quantity	Unit Cost	Total Amount
Section I - Sound Wall					
1	Construction Staking , work fully performed	STA	16	\$500.00	\$8,000
2	Barricading and Traffic Control, Design and Implementation , furnished and installed	LS	1	\$2,000.00	\$2,000
3	Joint Storm Water Pollution Prevention Plan (SWPPP), Implemented and Maintained , including Preparation of NOI and NOT submittals	LS	1	\$1,000.00	\$1,000
4	Silt Fence , furnished and installed complete in place.	LF	1,600	\$4.00	\$6,400
5	Stabilized Construction Entrance , furnished and installed complete in place, as per details and specifications	EA	1	\$1,750.00	\$1,750
6	4-in Topsoil and Block Sod , furnish and install including fertilizer, complete in place	SY	1,800	\$15.00	\$27,000
7	General Site Preparation , work fully performed complete in place	STA	16	\$4,000.00	\$64,000
8	Unclassified Street Excavation , work fully performed	CY	400	\$20.00	\$8,000
9	Sheeting, Shoring, and Bracing for Storm Drain Lines , furnished and installed where required by OSHA Standards that are in effect at the time of bidding, complete in place	LF	100	\$2.35	\$235
10	4'x4' Wye Inlet , constructed complete in place	EA	1	\$10,000.00	\$10,000
11	24-inch Grouted Rock Rip Rap , furnished and installed, complete in place	CY	32	\$205.00	\$6,560
12	4-inch Concrete Mow Strip , furnished and installed, complete in place	CY	200	\$500.00	\$100,000
12	Cast-in-Place Acoustic Noise Barrier , furnished and installed, complete in place	LF	1,600	\$610.00	\$976,000
13	24" Drilled Shaft Foundations , furnished and installed, complete in place	VF	2,560	\$170.00	\$435,200
Subtotal Section I - Sound Wall					\$1,646,145
Rounded Subtotal Section I					\$1,647,000

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ESTIMATE OF PROBABLE CONSTRUCTION COST

Item No.	Description	Unit	Total Quantity	Unit Cost	Total Amount
	Section II - Sound Wall Aesthetics (Both Sides)				
1	Public Art Mural on Sound Wall , work fully performed	LF	1,600	\$300.00	\$480,000
	Subtotal Section II - Sound Wall Aesthetics (Side 1)				\$480,000
	Rounded Subtotal Section II				\$480,000
	Subtotal Section I - Sound Wall				\$1,647,000
	Subtotal Section II - Sound Wall Aesthetics (Both Sides)				\$480,000
	Project Subtotal				\$2,127,000
	15% Contingency				\$319,050
	Total Project				\$2,446,050

This statement was prepared utilizing standard cost estimate practices. It is understood and agreed that this is an estimate only, and that Engineer shall not be liable to Owner or to a third party for any failure to accurately estimate the cost of the project, or any part thereof.



DAVID BURKETT, PE

Project Manager

David has 21 years of transportation design experience in all project phases including schematic, PS&E, and construction. He understands the full life cycle of a project such as understanding that constructability must be considered during the schematic phase and the importance of setting the design footprint early to begin environmental studies and keep the project on schedule. David's broad base of experience provides an added benefit.

Education

Bachelor of Science, Civil Engineering, Texas Tech University (2001)

Licenses and Registration

Professional Engineer, Texas No. 100068

Years of Experience

21 (18 years at Halff)

Location

Fort Worth, Texas

Exemplary Projects

Great Southwest Parkway Alignment Study (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* for the alignment study of Great Southwest Parkway from Avenue J to Fountain Parkway, approximately 5,600 lf. Great Southwest Parkway is classified as a principal six-lane divided arterial on the City of Grand Prairie Master Thoroughfare Plan which requires a 120-foot right-of-way. However, the existing roadway north of Fountain Parkway was built as a P4D with no room to expand to the interior. Additionally, the existing ROW between Avenue K and Fountain is 100 feet wide which suggests the roadway should be built as a P4D at least as far south as Avenue K. The roadway section south of Johnson Creek should match up with the P6D configuration south of Avenue J. Halff prepared a conceptual plan and profile for roadway which also included the proposed roadway alignment, typical sections as well as existing drainage, water, and sewer lines. For the segment of roadway extending from Avenue J to Avenue K, a bridge was shown to span the floodway of Johnson Creek. Halff also completed estimates of probable construction cost for the roadway alignment and a report summarizing the findings of the preliminary study.

Grand Prairie Improvements at Paragon Outlets (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* for managing the preliminary design and cost estimates for the following projects: pavement marking improvements at the intersection of Sara Jane Parkway and Great Southwest Parkway; IH 20 frontage road widening from Paragon Outlets to Great Southwest Parkway; pavement marking improvements at the intersection of Mayfield Road and northbound SH 360 frontage roads; addition of left turn lane along Great Southwest Parkway at the northbound approach to Sara Jane Parkway intersection; extension of Sara Jane Parkway to cross SH 360 and connect to Arbrook Drive; and ramp relocation to shift the existing northbound exit ramp on SH 360 to Mayfield Road. These projects all included preparation of preliminary horizontal and vertical alignments to determine feasibility and cost.

Westchester Parkway Alignment Study (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* responsible for the alignment study of Westchester Parkway from Dechman Drive to FM 1382, approximately 4,200 feet. Westchester Parkway is classified as a principal four-lane divided arterial on the City of Grand Prairie Master Thoroughfare Plan which requires a 100-foot right-of-way. The existing roadway west of Dechman Drive was built with a 70-foot right-of-way, as an M4U, and the City requested the alignment study maintain the M4U design and 70-foot right-of-way. Two alignment alternatives were prepared to minimize negative impacts to residents and other property owners. Halff prepared a conceptual plan and profile for both roadway alignments which also included the proposed drainage, water, sanitary sewer, and typical sections. Halff also completed estimates of probable construction cost for the roadway alignment and a letter report summarizing the findings of the preliminary study.

DAVID BURKETT, PE

Project Manager

Wildlife Parkway (Dallas County) Grand Prairie, Texas – *Project Manager*

responsible for overseeing the studies, analysis, and the design of Wildlife Parkway from SH 161 to Belt Line Road, approximately 9,300 lf. Most of the existing two-lane roadway is located in the Floodplain of the West Fork Trinity River. The roadway will be elevated out of the Floodplain and widened to a four-lane divided thoroughfare having dedicated left and right turn lanes. The project will also extend the existing roadway across the West Fork Trinity River by adding a 1,900 lf bridge. Additionally, a 500 lf bridge will be part of the design plans for an overflow swale west of Belt Line Road. The project includes the design of a 12-foot wide trail along the roadway extending from SH 161 to east of Hardrock Road, the West Fork Trinity River, a distance of 3,500 lf. This trail will serve as key part of the North Texas Regional Veloweb. The project also includes the design of two bridges with a combined length of 2,400 lf. The project also included a Value Engineering Study to reduce project construction costs. Responsible for the management and preparation of the design schematic and construction plans including paving, grading, traffic control and drainage. Also responsible for project management of internal and external subconsultants.

IH 20 Frontage Road Right Turn Lane (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* responsible for the design of a right turn lane addition to the eastbound IH 20 frontage road at Lake Ridge Parkway. Design includes paving, grading, drainage, traffic control, erosion control, pavement marking and signage. Halff is also responsible for SUE, utility coordination, working with TxDOT to obtain the necessary permits, and assisting with bidding and construction. Responsible as the project manager for the design of this project. Design was complete in September 2018 and construction complete in August 2019.

IH 30 Frontage Road PS&E (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* responsible for the preparation of the plans, specifications, and estimates for the IH 30 Frontage Roads (Eastbound from Northwest 7th to Belt Line Road), a distance of 5,300 lf. Responsible for the project management of internal subconsultants to complete the PS&E design, ROW documentation and environmental documentation. The PS&E design includes the horizontal and vertical alignments for the frontage roads and ramps, paving design, drainage design, preparation of traffic control plans, pavement marking design, signage design, retaining wall design, and preparation of removal plans and typical sections.

Grand Prairie Park & Ride Facility (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* responsible for the design of paving, grading, pavement markings, signing and retaining wall layouts. Additionally, oversight and review of sub consultant work for the design of drainage, retaining walls, illumination, landscape architecture, and shelter architecture. This project includes the design of a 350-car parking facility with room for expansion up to 500 parking spaces. This project is located on the South side of IH 30 East of Belt Line Road. The design includes landscape architecture, paving, grading, drainage, illumination, retaining walls, erosion control, and design of a passenger shelter.

Palace Parkway (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* responsible for the construction of Palace Parkway from Beltline Road to the IH 30 westbound frontage road, approximately 2,400-feet. Palace Parkway is a four-lane, undivided minor arterial. Lead Engineer in the preparation of plans and specifications for paving, grading, drainage, traffic signal, water, and sanitary sewer improvements. Other responsibilities include coordinating the preparation of a CLOMR, CDC permit, TRA permit and acquisition of the ROW and slope easements.



STEPHEN CRAWFORD, PE, CFM

Principal-in-Charge

Stephen has extensive experience with municipal clients and projects. He has worked on numerous drainage studies and drainage design projects in addition to flood mitigation analysis and design, streambank stabilization design, shoreline restoration, site development projects, and multi-use public facility site development. Stephen also has experience with municipal roadway design, utility rehabilitation/relocation, flood warning installations, and construction management.

Education

Bachelor of Science, Civil Engineering, Louisiana Tech University (1996)

Licenses and Registration

Professional Engineer, Texas No. 89249

Years of Experience

26 (26 years at Halff)

Location

Austin, Texas

Exemplary Projects

South Fork of Cottonwood Creek Bridge & Culvert Improvements at Three Crossings (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* for the development of plans and specifications for culvert improvements and bridge replacements at three roadway crossings. Great Southwest Parkway, Robinson Road and Marshall Drive. along South Fork of Cottonwood Creek to improve the flood carrying capacity of each crossing. Design additional culverts at Great Southwest Parkway and new bridges at the other two crossings. Road profiles adjusted to meet desired capacity needs. Prepared traffic control plans for use in construction and coordinated with TRA for a sanitary sewer line relocation. Halff provided structural design and environmental permitting services, as well as additional erosion protection improvements provided upstream and downstream of each roadway.

Tarrant Road Improvements at Arbor Creek (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* for the development of plans and specifications for improvements to culverts to improve the flood carrying capacity of the culverts. Design included providing additional culverts and raising the road profile. Prepared traffic control plans for use in construction and coordinated with TRA on connecting a relocated sanitary sewer line to their system. Additional rock chutes & erosion protection improvements provided upstream and downstream.

Program Management Miscellaneous Services (City of Grand Prairie) | Grand Prairie, Texas – *Program Manager* for various projects for the City including:

- MacArthur Blvd Cultural Resources Monitoring
- Keith Heights Sinkhole Repairs
- Taaffe Creek Rock Chute Design
- Drainage Design Manual Update & Review
- Lake Parks West Flume Design & Drafting
- Central Park Lake 1 Pipe Design
- Vega Street Drainage Design
- Keith Heights Storm Drain Design
- Taaffe Creek Flood Study Review
- Storm Drain Outfall Drafting Services (2 locations)

FY 2010-2017 Drainage Reviews (City of Grand Prairie) | Grand Prairie, Texas – *Program Manager* for indefinite delivery contract to perform third-party drainage reviews for site development submittals in the City of Grand Prairie. To-date Halff has performed more than 100 drainage reviews. Reviews include detailed review of site drainage features and calculations to ensure conformance with drainage criteria. Includes detention and erosion plan reviews and includes meetings with city and client as needed. Performed major review of the future Lakeridge Parkway Extension project hydraulics along Fish Creek, IKEA and Epic Towne Crossing.

Wildlife Parkway (Dallas County) | Dallas County, Texas – *Quality Assurance Lead* responsible for design review & coordination with City of Grand Prairie Staff. Project includes design of four-lane divided roadway in Grand Prairie between SH 161 to Belt Line Road, 9,300-lf. Project also includes the design of 12-ft wide trail extending from SH 161 to east of Hardrock Rd, 3,500-lf. Trail will serve as key part of the North TX Regional Veloweb. Project also includes design of two bridges with combined length of 2,400 lf.



DENNIS HAAR, PE

Quality Assurance / Quality Control

As Halff's Public Works Quality Assurance Manager, Dennis provides QA/QC services for large, multidiscipline projects across teams, offices, and disciplines. He has 24 years of experience working as quality control, project manager or design engineer on numerous construction and engineering highway, private development, and municipal projects.

Education

Master of Science, Structural Engineering, Texas Tech University (1998)

Bachelor of Science, Civil Engineering, Texas Tech University (1996)

Licenses and Registration

Professional Engineer, Texas No. 91811

Years of Experience

24 (23 years at Halff)

Location

Fort Worth, Texas

Exemplary Projects

Transportation Road Improvement Program (TRIP) (Lubbock County) | Lubbock County, Texas – *Program Manager* who was responsible for identifying 133 projects within TRIP valued at more than \$675 million. The identified projects included capacity, safety, surface conversion and TxDOT on-system projects. With the projects identified, Halff prepared planning level cost estimates for each project and prioritized the projects in order of need. Additionally, Halff prepared a web map to track the projects and their ranking and aided with Commissioners Court and community presentations.

President George Bush Turn Pike (SH 161) Main Lanes North of IH 30 to IH 20 (City of Grand Prairie) | Grand Prairie, Texas – *Drainage Design Lead* for the 6.5-mile main lane extension of the PGBT to IH 20. This design build project divided the design into four segments. The drainage lead responsibilities included coordinating the plan production among four design teams in four different branch offices across the state, coordination among the different project disciplines, contractor, and NTTA, and implementation of the design quality control and assurance measures for the drainage design. The lead developed the necessary drainage design protocol for the project to meet the contract technical provision, TxDOT, FHWA and NTTA design criteria. The design included storm drain design for main lane, hydraulic evaluation of six creek crossing, detention pond design to maintain peak discharges to predevelopment conditions through the existing neighborhoods; pavement and wall drain coordination, utility coordination, and construction services.

SH 161 Utility Relocation (City of Grand Prairie), Grand Prairie, Texas – *Project Manager* responsible for the water and sanitary sewer facilities abandonment and relocation along 4.6-miles of the proposed SH 161 corridor through the City of Grand Prairie. Responsible for overseeing the analysis and design for the preparation of construction documents (plans and specifications) for sanitary sewer and water line relocations in advance of new highway construction. Prepared construction plans for 21,400 lf of 8-inch to 24-inch water line and 12,100 lf of 8-inch to 21-inch sanitary sewer line for SH 161 Segments 2 and 3.

IH 30 Utility Relocation (City of Grand Prairie), Grand Prairie, Texas – *Project Manager* responsible for water and wastewater utility relocations for future IH 30 frontage road in Grand Prairie.

Cottonwood and Fish Creek Stream Stability (City of Grand Prairie), Grand Prairie, Texas – *QA/QC Manager* for erosion design services at four locations along Cottonwood Creek and Fish Creek, the largest streams in Grand Prairie. Primary goals were to reduce further downcutting of the stream bed and to protect existing infrastructure including a dam, pedestrian bridge and sanitary sewer lines. Improvements included rock riprap chutes for grade control structures along the centerline and rock riprap slope and bank protection at the dam and pedestrian bridge.

IH 30/Palace Parkway Boundary Surveys (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* responsible for the engineering and survey services for Palace Parkway and IH30 in Grand Prairie.



CONNOR GUERRERO, PE

Deputy Project Manager

Connor has served as design engineer with project management responsibilities for a multitude of municipal and TxDOT projects involving roadway design, traffic control, grading, storm drainage design, erosion control, and 3D Open Roads modeling.

Education

Bachelor of Science, Civil Engineering, Texas Tech University (2016)

Licenses and Registration

Professional Engineer, Texas No. 140690

Years of Experience

6 (6 years at Halff)

Location

Fort Worth, Texas

Exemplary Projects

IH 20 Frontage Road Right Turn Lane (City of Grand Prairie) | Grand Prairie, Texas – *Project Engineer* responsible for plan production and utility coordination. The City of Grand Prairie contracted with Halff to design a right-turn lane addition to the eastbound IH 20 frontage road at Lake Ridge Parkway. Design includes paving, grading, drainage, traffic control, erosion control, pavement marking and signage. Halff is also responsible for SUE, utility coordination, working with TxDOT to obtain the necessary permits, and assisting with bidding and construction. Design was complete in September 2018 and construction complete in August 2019.

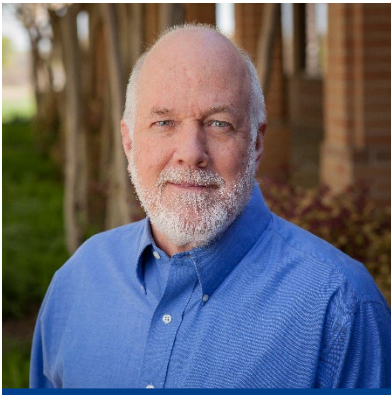
Palace Parkway (City of Grand Prairie) | Grand Prairie, Texas – *Project Engineer* responsible This updating the Palace Parkway construction plans performed by Halff in 2010. Palace Parkway, 2,500 feet in length, was extended from Belt Line Road east to the I-30 frontage road. This project included paving, drainage, water, sanitary sewer, signing, pavement markings and erosion control.

Good Link Trail (City of Grand Prairie) | Grand Prairie, Texas – *Project Engineer* responsible for the schematic and feasibility study for rerouting Good Link Trail at Wildlife Parkway in the City of Grand Prairie.

FM 148 (Kaufman County) | Kaufman County, Texas – *Project Engineer* responsible for project management, roadway design, drainage design and 3D modeling for a new two-lane roadway which bypassed the town of Crandall and connected to US 175. The new roadway tied into the existing roadway at the south end of town and route traffic to/from US 175 a distance of 8,300 feet. The project included the reconstruction of 1,500 feet of two-lane northbound frontage road on US 175 and 3,800 feet of the main lane pavement (four lanes of pavement) to raise the main lanes over the proposed FM 148 bypass roadway creating a grade separated interchange. The design included roadway, bridge, retaining wall, drainage, traffic control, erosion control, and signing/pavement marking.

US 81 / US 287 Frontage Road (TxDOT Fort Worth District) | Rhome and Fort Worth, Texas – *Project Engineer* responsible for roadway design, alternatives analysis, schematic production and 3D modeling. US 287 includes the development of a design schematic to construct continuous one-way, two-lane frontage roads from south of Avondale Haslet to north of Pioneer Road. The total project length is 10 miles and includes reconstruction of cross streets and addition of new cross streets. Reconstruction of 5 miles of main lanes within the corridor is also included.

SH 36 (TxDOT Yoakum District) | Hamilton County, Texas – *Project Engineer* responsible for passing lane layout, typical sections, cost estimate, plan production, cross-sections, and 3D modeling. SH 36 is an existing two-lane roadway with very few short passing lanes. Halff prepared the design to expand this roadway to a Super 2 highway which includes frequent passing lanes ranging between one mile and two miles in length. The project also included shoulder widening, and extended between the limits of Hamilton County, a distance of 25 miles.



DOUG CALHOUN, RPLS

Survey Manager

Doug joined the Surveying Department at Halff in 1981 as a Rodman/Chainman. He advanced through the survey department and has been a Registered Professional Land Surveyor since 2002 and serves as the Survey Manager of the Fort Worth office since 2003. Doug has performed and supervised the construction of paving, drainage, sanitary sewer, water, electrical, and communication duct banks and earthwork type development projects. He has extensive surveying experience with boundary, platting, improvement surveys (ALTA\NSPS), topographic surveys, and surveys for design and construction as well as Global Positioning Systems. Doug's experience includes deed research, coordinate geometry input of deeds, boundary solutions and legal descriptions, overseeing projects from start to finish.

Licenses and Registration

Registered Professional Land Surveyor, Texas No. 5619

Years of Experience

41 (41 years at Halff)

Location

Fort Worth, Texas

Exemplary Projects

Cottonwood Creek Culvert Improvements (City of Grand Prairie) | Grand Prairie, Texas – *Survey Manager* for this project which involved plans and specifications for culvert improvements at Great Southwest Parkway and bridge replacements at Robinson Road and Marshall Drive along the South Fork of Cottonwood Creek. The project improved the flood carrying capacity of each crossing, thus providing an improved level of service of the roadway crossings to have a 50-year storm event or greater passing.

IH 30 Frontage Roads (City of Grand Prairie) | Grand Prairie, Texas – *Survey Manager* for this project which included preparation of PS&E for the IH 30 Frontage Roads (eastbound from Belt Line Road to Future NE 15th Street). The design included paving, grading, traffic control, retaining wall, drainage, erosion control, pavement markings, signing, illumination, and ROW map preparation. The Park and Ride Facility project included the design of a 350-car parking facility with room for expansion up to 500 parking spaces. The new location of this 10-acre site is in the TxDOT surplus right of way on the south side of IH 30, east of Belt Line Road. The design included landscape architecture, paving, grading, drainage, illumination, retaining walls, erosion control, and design of a passenger shelter.

Bardin Road (City of Grand Prairie) | Grand Prairie, Texas – *Survey Manager* for this project which involved the design of Bardin Road, a four-lane divided arterial roadway from Anca Lane to Robinson and Matthew Road, a four-lane undivided minor arterial roadway from IH 20 to Bardin Road. Total length of the contract was 10,000 lf. Services included schematic design of roadways, plan and profile of roadways, cross-sections, and storm drain plan and profile.

Waketon Road (Town of Flower Mound) | Flower Mound, Texas – *Survey Manager* overseeing the field and office work for topographic for design and right of way documents of the property adjacent to Waketon Road from Chinn Chapel Road to 1100 feet east of Chinn Chapel.

FM 423 (City of The Colony) | The Colony, Texas – *Survey Manager* for a major thoroughfare in The Colony overseeing and preparing 35 utility, water and sanitary sewer easements.

North Colony Boulevard (City of The Colony) | The Colony, Texas – *Survey Manager* for the reconstruction and widening of North Colony Boulevard from Curry Drive to Paige Road, 6,600-feet. Managed the coordinate geometry and boundary solution for the lot and block placement to determine the right of way for possible right of way takes.

Douglas Lane (City of North Richland Hills) | North Richland Hills, Texas – *Survey Manager* overseeing the design surveys of 2,300 lf of roadway. Project included preparation of a total of 43 right of way and temporary construction parcels.



SCOTT RUSHING, PE, CFM

Senior H&H Engineer

Scott has extensive experience performing hydrologic and hydraulic studies, stormwater master planning studies, stormwater rate studies, channel erosion design, and drainage CIP development. Scott has led major stormwater modeling efforts and citywide planning efforts for many communities across Texas. He is skilled at ensuring that modeling results represent real-world flood risk in complex urban drainage systems and has refined expertise in developing feasible mitigation solutions. He has also performed many on/off system bridge hydraulic designs and has additionally provided FEMA bridge hydraulic analysis for structures. He works with the team to identify structure changes needed to mitigate the impacts, such as pier diameter and location, grading/clearing, and structural depth.

Education

Bachelor of Science, Civil Engineering, Texas A&M University (2008)

Licenses and Registration

Professional Engineer, Texas No. 114519

Certified Floodplain Manager, No. 1775-09N

Years of Experience

14 (14 years at Halff)

Location

Fort Worth, Texas

Exemplary Projects

Arbor, Cedar, Cottonwood and Fish Creek FEMA CTP Mapping (City of Grand Prairie) | Grand Prairie, Texas – *QA/QC and Project Coordinator* who was responsible for the overall project coordination with City consultants to compile stream models and floodplain mapping for submittal to FEMA. Halff compiled Technical Support Data Notebooks (TSDN) and other deliverables to standardize submittals and ensure that all data was meeting the FEMA Guidelines and Specifications. Halff prepared H&H models for five streams within the study area and provided QA/QC review of all H&H models. This project was selected by FEMA for partial funding through the Cooperating Technical Partner (CTP) program. Tasks performed included detailed H&H modeling of Willis Branch and QA/QC of Cottonwood and Fish Creek sub-basin delineations.

Cannon Branch Drainage Study (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* for a drainage study to size a conceptual regional detention pond to alleviate downstream structure and roadway overtopping. The project included HEC-HMS model development and QA/QC of HEC-RAS model development performed by City staff. Developed conceptual opinions of probable cost and provided recommendations for additional downstream improvements in conjunction with the regional detention.

Citywide Storm Drain Master Plan Detail Study (City of Grand Prairie) | Grand Prairie, Texas – *Project Manager* for this stormwater master plan to provide site-specific capacity information for existing storm drain systems and to develop improvement alternatives with coordination from the City to address flooding problems caused by inadequate drainage systems. Nine major watersheds within the City containing more than 580,000 lf of storm drain trunk lines (24 inches or larger) were analyzed for the 2-year, 10-year, and 100-year events using StormCAD v8i modeling package. Drainage areas were delineated for each modeled inlet and rational method discharges were computed for each modeled storm event. Living StormCAD models were provided to the City to facilitate on the fly updates to existing storm drain systems by incorporating development changes and watershed revisions so that information is always current. A comprehensive prioritization of capital projects was developed as part of this master plan, which included improvement alternatives from four additional major watersheds studied previously by Halff using the same methodology and modeling software.

FM 148 Bypass – Relief Route (TxDOT Dallas District) Kaufman County – *Hydraulic Task Leader* responsible for bridge class culvert sizing. Project included hydrologic modeling of a large SCS reservoir immediately upstream of the new culvert crossing. Scott developed a hydraulic model to ensure the culverts passed the design storm and caused no adverse impact outside of TxDOT ROW per local drainage criteria.

Gibson Lane Extension (City of Texarkana) | Texarkana, Texas – *Hydraulic Task Leader* who completed the hydraulic analysis and bridge design for an off-system bridge over a Zone AE floodplain. Halff leveraged existing FEMA models and designed the bridge to TxDOT standards with a span over the FEMA floodway with only piers encroaching the floodway. The design minimized the required mitigation, drainage easement acquisition and environmental impact to meet NWP 14. Halff designed SWPPP per HEC-23 and provided a no-rise memo to the FPA.



CAMERON VESTER, PE

Senior Structural Engineer

Cameron joined Halff in 2010 after interning with the firm for four years. Since joining Halff, he has worked as a design engineer for several municipal and TxDOT projects. These projects have involved a wide variety of construction materials including reinforced concrete, reinforced masonry, light gage metal, structural steel and timber.

Education

Master of Engineering,
Structural, Rice University
(2010)

Bachelor of Science, Civil
Engineering, Rice University
(2010)

Licenses and Registration

Professional Engineer, Texas
No. 128858

Years of Experience

12 (12 years at Halff)

Location

Fort Worth, Texas

Exemplary Projects

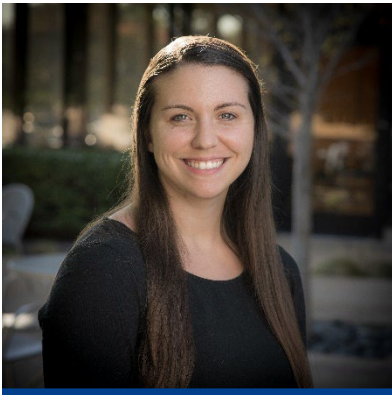
Grand Prairie Improvements at Paragon Outlets, Grand Prairie, Texas – *Design Engineer* responsible for managing the preliminary design of each alternative. Project includes preliminary design and cost estimates for the following projects. Pavement marking improvements at the intersection of Sara Jane Parkway and Great Southwest Parkway. IH 20 frontage road widening from Paragon Outlets to Great Southwest Parkway. Pavement marking improvements at the intersection of Mayfield Road and northbound SH 360 frontage roads. Addition of left turn lane along Great Southwest Parkway at the northbound approach to Sara Jane Parkway intersection. Extension of Sara Jane Parkway to cross SH 360 and connect to Arbrook Drive. Ramp relocation to shift the existing northbound exit ramp on SH 360 to Mayfield Road. These projects all included preparation of preliminary horizontal and vertical alignments to determine feasibility and cost.

PGBT (SH 161) Main Lanes North of IH 30 to IH20, Grand Prairie, Texas – *Design Engineer* for the 6.5-mile main lane extension of the PGBT to IH 20. This design build project divided the design into four segments. The drainage lead responsibilities included coordinating the plan production among four design teams in four different branch offices across the state; coordination among the different project disciplines, contractor and NTTA; and implementation of the design quality control and assurance measures for the drainage design. The lead developed the necessary drainage design protocol for the project to meet the contract technical provision, TxDOT, FHWA, and NTTA design criteria. The design included storm drain design for main lane, hydraulic evaluation of six creek crossing, detention pond design to maintain peak discharges to predevelopment conditions through the existing neighborhoods; pavement and wall drain coordination, utility coordination, and construction services. Design Engineer responsibilities were to design Line M (8,310 lf) and Line O (7,880 lf) and the addition of two area inlets.

CRWS Secondary Access (Trinity River Authority) | Grand Prairie, Texas – *Design Engineer* for the improvement of the secondary access road and levee. Project includes 40,000 sf of segmented block MSE wall and 2,200 sf of cantilever, cast-in-place concrete headwall. The project also included a premanufactured guard booth installed on a suspended concrete slab supported by straight drilled shafts.

Wildlife Parkway (Dallas County) | Dallas County, Texas – *Design Engineer* for the design of Wildlife Parkway from SH 161 to Belt Line Road, 9,300 lf. Most of the existing two-lane roadway is in the floodplain of the West Fork Trinity River and will be elevated out of the floodplain and widened to a four-lane divided thoroughfare having dedicated left turn lanes. The project will also extend the existing roadway across the West Fork Trinity River by adding a 1,900 lf bridge. Additionally, a 500 lf bridge will be part of the design plans for overflow swale west of Belt Line Road. Responsible for the preparation of the design schematic and construction plans including paving, grading, traffic control and drainage.

Baker Boulevard Intersection Improvements (City of Richland Hills) | Richland Hills, Texas – *Design Engineer* preparing design schematic and construction plans including paving, grading, traffic control and drainage for intersection improvements along Baker Boulevard at Rufe Snow Drive, Ash Park Drive/Vance Road, and Handley-Ederville Road. This project will be let and constructed by TxDOT. Improvements for this project include the addition of sidewalk, curb and gutter at each intersection, realigning Ash Park Drive to eliminate the intersection offset with Vance Road. The project also includes addition of bicycle lanes along Baker Boulevard.



CARA ROUVALDT

Public Involvement / Noise Study Analysis

Cara has 12 years of experience and has spent her full career at Halff. She manages a team of environmental and public involvement (PI) specialists and uses Halff's QA/QC procedures to ensure delivery of quality documentation. Cara has led comprehensive PI efforts, directed in-person and virtual PI events and completed environmental documentation for NEPA compliance on major roadway corridors for every major Texas region.

Education

Bachelor of Arts, Environmental Studies, Austin College (2010)

Years of Experience

12 (12 years at Halff)

Location

Richardson, Texas

Exemplary Projects

IH 635 LBJ East Freeway, Schematic and Re-evaluation (TxDOT Dallas District) | Dallas, Garland and Mesquite, Texas – *Public Involvement Task Leader* who directed the re-evaluation of the original EA/FONSI, including stakeholder meetings, an open house public meeting, public hearing, and two noise workshops. This proposed project included the reconstruction of a 10-mile segment of IH 635 from US 75 to IH 30 and would add general purpose lanes plus auxiliary lanes, managed lanes, and frontage roads. Adjacent property owners voiced outrage at the public meeting over noise barriers originally proposed in the 2003 EA that were never built. Cara worked to expedite the noise workshops and environmental documentation in order to appease adjacent property owners and enable the approved proposed noise barriers to proceed to final design and construction. Environmental clearance received in April 2017.

SH 205 Corridor, Alternatives Analysis, Schematic, and Environmental Assessment (TxDOT Dallas District) | Kaufman, Rockwall and Collin Counties, Texas – *Public Involvement Task Leader* for this project converting the existing two-lane highway into a four-lane divided arterial with ultimate accommodations for six lanes as well as a new location John King Blvd alignment. The project was broken up into three projects - north, middle, and south. Cara managed the environmental studies, which included two CEs and one EA. She also oversaw the PI effort, which included multiple stakeholder meetings, one-on-one city staff meetings, MAPOs with adjacent neighborhoods, public meetings, and public hearings. The projects received environmental clearance in April 2018 (North CE), April 2019 (South EA FONSI), and January 2020 (Middle CE).

I-45/US 175 SM Wright Phases I & II (TxDOT Dallas District) | Dallas, Texas – *Public Involvement Task Leader* who coordinated agency/public outreach with 75 meetings during two years. Cara used a wide range of tools to engage stakeholders, EOs and the public including public meetings/hearings, open houses, stakeholder meetings, newsletters, flyers, 3D visualization, bilingual materials, website, and media outreach. At the public hearing, a new concern was raised regarding access. Cara worked to develop alternative concepts and used a special Saturday Town Hall meeting hosted by a state Senator to gather stakeholder input. A subsequent public hearing was held five months later with significant community support. The project received a FONSI 75 days afterwards.

I-30/SH 360 (TxDOT Fort Worth District) | Fort Worth, Texas – *Environmental Task Leader* who faced several environmental challenges prior to environmental clearance, including sensitive receivers to traffic noise, impacts to water resources and Section 404 permitting, riparian forest impacts, and historic resources including an adjacent historic cemetery. Cara worked with project engineers to avoid ROW take at the cemetery that resulted in eliminating one of three access drives to the Watson Cemetery. Cara expedited the project schedule and minimized costs by working with the project engineers and Fort Worth staff to develop a schematic that minimized impacts to WOTUS and avoided an Individual Permit under Section 404 of the Clean Water Act (CWA).



JAMES (JAY) SAPPINGTON, IV, PE

Geotechnical Engineer

Jay, President and Director of Engineering at CMJ Engineering, Inc., has worked in the field of geotechnical engineering and construction materials testing and inspection since 2004. His wide-ranging experience includes environmental investigations, remediation, and engineering, hydrology and hydraulics engineering, and land development engineering. Typical projects include commercial, retail, manufacturing, and educational buildings, warehouses, highways and streets, bridges, above and below-grade retaining structures, earth slope stability (distress, remediation, and design), major utility installations, elevated and ground-supported storage tanks, apartments and townhomes, residential subdivisions, and distress investigations.

Education

Master of Science, Civil Engineering, University of Texas at Arlington (2003)

Bachelor of Science, Civil Engineering, University of Texas at Arlington (2002)

Licenses and Registration

Professional Engineer, Texas No. 97402

Years of Experience

18 (18 years with CMJ)

Location

Fort Worth, Texas

Exemplary Projects

Park Vista Boulevard (City of Fort Worth) | Fort Worth, Texas – *Geotechnical Engineer* for this project which consisted of extending Park Vista Boulevard from Ray White Road northward to Keller Hicks Road. The project length is on the order of 1 mile and includes a bridge crossing of Big Bear Creek. Three roundabout features were designed at the major intersections of Ray White Road, Golden Triangle Boulevard, and Keller Hicks Road.

CRWS Secondary Access Route (Trinity River Authority) | Grand Prairie, Texas – *Geotechnical Engineer* for this approximate 1.4-mile project that began at the east end of Gifford Street traversing eastward to the existing rail spur, then follows the rail spur northward to the plant. Fill was planned along the project length to establish the final roadway profile above the 100-year water surface elevation. In addition, retaining walls with a maximum height of approximately 8 feet were planned to establish final roadway grades along the westernmost portion of the alignment. The access route will traverse up to the crest of the existing flood protection levee at the connection to the plant at Avenue F, requiring an impact evaluation of the levee in this vicinity.

Northeast Campus Bus Stop Addition and Paving Repairs (Tarrant County College District) | Hurst, Texas – *Geotechnical Engineer* for this geotechnical engineering study of a new bus stop to include a pre-fabricated shelter serving the TCCD NE Campus located at 828 W. Hardwood Road in Hurst. In addition, paving repair/replacements were planned at key turning movement locations along the proposed bus route.

Northwest Campus Paving Assessment and Repair (Tarrant County College District) | Fort Worth, Texas – The project consisted of evaluation and either refurbishing or reconstructing select sections of the existing distressed concrete roadways serving the TCCD NW Campus located at 4801 Marine Creek Parkway in Fort Worth. The subject existing concrete roadway extended west from Marine Creek Parkway 1,500 feet then north and westward an additional 1,000 feet.

Marine Creek M-365 Parallel Interceptor (City of Fort Worth) | Fort Worth, Texas – *Geotechnical Engineer* for this planned M-365 parallel sewer line beginning near the southern dead-end of Ten Mile Bridge Road, traversing northwestward along the existing line for an approximate total project length of 5,200 feet. The parallel relief interceptor was planned 24 to 36 inches in diameter. Consideration was also being given to replacing the existing sewer line using pipe-bursting techniques.

Plano Environmental Education Center Water Walk (City of Plano) | Plano, Texas – *Geotechnical Engineer* for these planned exterior improvements to the existing Plano Environmental Education Center located at 4116 W. Plano Parkway in Plano. The improvements will include concrete paved areas, decomposed granite walks, relatively low-height retaining walls, and unique boardwalk/pier over the existing water feature.