

HIDALGO COUNTY
Professional Engineering Services
Contract # C-21-0944-02-08
Work Authorization Form

WORK AUTHORIZATION NO. 2

THIS WORK AUTHORIZATION is made pursuant to the terms and conditions of **Article 7** of the Agreement made by and between **HIDALGO COUNTY**, action herein by and through the **Commissioner’s Court**, hereinafter called the “**Owner**,” and, **B2Z Engineering, LLC**, professional engineers of Mission, Texas, hereinafter called “**Engineer**”.

PART 1. SCOPE OF WORK

The purpose of this Work Authorization is for the **Engineer** to provide Surveying, Geotechnical, and Plans, Specifications, and Estimates (PS&E) for the Recreational Trails Connectivity Project. (Mission Extension Segment, McAllen Extension Segment, & Hidalgo Extension Segment)

The Engineer is to provide the Services as required by the Agreement with Owner. This includes but is not limited to the services identified in **EXHIBIT “A” – Scope of Services to be provided by the Engineer** which is attached hereto and incorporated by reference.

PART 2. ESTIMATED COST

The estimated cost for services under this Work Authorization is **\$1,149,959.60**. This amount is based upon the costs outlined in the Estimated **Cost Proposal** attached hereto as **EXHIBIT “B”**.

PART 3. PAYMENT

Compensation and payment to the Engineer for the services established under this Work Authorization shall be made in accordance with the On-Call Services Agreement between Owner and Engineer.

PART 4. FUNDING

This Work Authorization No. 2 shall be funded through funding source:
Account No. _____
Requisition Number _____ (**MUST BE INCLUDED AFTER CC APPROVAL**)

PART 5. PERIOD OF SERVICE

This Work Authorization shall become effective on the date of final acceptance of the parties hereto and terminate upon completion of scope of work provided in this work authorization.

PART 6. RESPONSIBILITIES AND OBLIGATIONS

This Authorization does not waive the parties’ responsibilities and obligations provided under the **Agreement**.

PART 7. ACKNOWLEDGEMENT AND CONFIRMATION

Acknowledgement and confirmation by **Hidalgo County Precinct 2**, Commissioner Eduardo Cantu, as to content and detail of this **Work Authorization No. 2.**

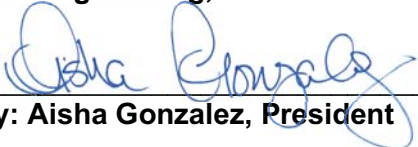
**HIDALGO COUNTY
COMMISSIONER PRECINCT NO. 2**

BY: _____

PART 8. ACCEPTANCE AND APPROVAL

This Work Authorization is hereby accepted, approved by Hidalgo County Commissioners' Court on _____ as indicated below and effective as of _____ day of _____, 2022.

**THE ENGINEER:
B2Z Engineering, LLC**



By: **Aisha Gonzalez, President**

**THE OWNER:
HIDALGO COUNTY**

By: **Richard F. Cortez, County Judge**

ATTEST:

By: **Arturo Guajardo, Jr., County Clerk**

LIST OF ATTACHMENTS

Exhibit A – Services to be Provided by the Engineer
Exhibit B – Cost Proposal

EXHIBIT “A”
Services to be provided by the Engineer

PROJECT INFO:

- **Project Name:** Recreational Trails Connectivity Project – Survey, Geotech, & PS&E
- **Project Limits:** Segment 1 – Mission Extension Route
Segment 2 – McAllen Extension Route
Segment 3 – Hidalgo Extension Route

GENERAL SCOPE OF WORK:

The work to be performed by the **Engineer** under this work authorization shall consist of providing Engineering Services required for Surveying, Geotechnical, and Plans, Specification, and Estimate (PS&E) of the proposed Recreational Trails Connectivity Project located within the Cities of Mission, McAllen, Pharr, Hidalgo, San Juan, and within the unincorporated areas along the project limits in Hidalgo County hereinafter denoted as the **Project**.

The **Engineer** will furnish all equipment, materials, supplies, and incidentals as needed to perform the services required by this Work Authorization, except as otherwise specified in Exhibit A, “Services to be provided by the **Owner**.”

Specific activities to be performed by the **Engineer**, as generally outlined in the Contract, including the following:

SECTION 6 – FIELD SURVEYING AND PHOTOGRAMMETRY

Services
Provided By:
SURVEYOR COUNTY

- | | | |
|------------|-----------|--|
| <u>YES</u> | <u>NO</u> | 1. Field Surveying |
| | | a. Primary Project Control - 3 to 5 miles spacing
Precision shall be 1 part in 20,000 or better unless otherwise directed by the district engineer.
(1) Establish horizontal control points
(2) Establish vertical control points |

NOTE: ALL BEARING AND DISTANCE SHALL BE BASED ON THE STATE PLANE COORDINATE SYSTEM NAD 1983, SOUTH ZONE.

ALL DISTANCES AND COORDINATES SHALL BE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999960

- | | | |
|------------|-----------|--|
| <u>YES</u> | <u>NO</u> | b. Secondary Project Control (Surveyor shall recover and/or reset H&V Control Points as provided by the Engineer and create Survey Data Sheets for inclusion in the Project Plans. <ul style="list-style-type: none">• No traverse should exceed 25 angle points. Planimetrics shall be Lt & Rt from the proposed R.O.W. as per the schematic provided by the Engineer.• The unadjusted angular error should not exceed 2 seconds per angle, plus 14 seconds. |
|------------|-----------|--|

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Services
 Provided By:
SURVEYOR COUNTY

- The unadjusted ratio of precision should be one part in 10,000 or better. (The ratio of precision is the total length of the traverse divided by the total error.)
- The unadjusted vertical error should not exceed 0.03 foot per mile of traverse.

NO NO
NO NO
NO NO
NO NO

- (1) Project control base lines
- (2) Photogrammetric ground control
 - (a) Establish horizontal control
 - (b) Establish vertical control points
 - (c) Place and maintain control point targets

YES NO

- c. Other Field Surveying
 - (1) **The limit of the Design surveys shall be 700-ft before and after the limits of the project as identified by the Project Engineer on the schematic. Establish horizontal and vertical control.** Set benchmarks at 1000-ft intervals along the project proposed right-of-way. Provide x,y,z for each Benchmark. The B.M.'s shall be #5 I.R. 2-ft in depth set in concrete. **The surveyor shall provide a H&V Book (a Sample shall be provided by the Engineer to the Surveyor).** The Surveyor will provide a 3-pt reference sketch with ties to the B.M.s for inclusion the the existing H&V Control Book. Establish benchmark circuit throughout the project with a tolerance of 0.03'/ft per mile error vertically.
 - (2) Complete topographic and cross section survey, data processing, and CADD mapping (2D & 3D) for the limits of the project.
 - (3) Locate all visible utilities, data processing and CADD mapping (2D & 3D) including irrigation lines. Follow sample provided by the Engineer.
 - (4) Field locate cross culverts, driveway culverts, inverts, irrigation lines, within the project limits, data processing and CADD mapping (2D & 3D).
 - (5) Right of Entry, Right of Way Research, and Appraisal District Records is the responsibility of the Surveyor.
 - (6) The Surveyor shall also paint/mark the proposed centerline as approved by Engineer. (500-ft stations and a tick mark at 100-ft. stations –12 inches long) before construction for the purpose of utility adjustments and project location.
 - (7) Profile and cross section intersecting streets for ties into project (500-ft. beyond the proposed R.O.W. per schematic and 20-ft wider than the existing R.O.W. of intersecting street).
 - (8) Cross section irrigation crossings for a distance of 20-ft beyond the proposed R.O.W. at 100-ft intervals in a D.T.M. file. Provide a complete description of irrigation appurtenances as identified by the engineer sample layout.
 - (9) Tie Horizontally and Vertically the existing storm drain system that lies within the existing proposed R.O.W. including the elevation of the outfall of said recovered existing storm drain systems.

YES NO

- (10) Tie to existing underground and overhead utilities (location, elevation and direction)
 - Horizontally – the surveyor shall call the 1-800 number for the utilities to be marked on the ground as well as any city water and sewer lines. He shall tie all visible utility crossings with name, address and Phone #'s of utility companies. The Engineer will coordinate with the utility companies and jointly the Surveyor and the Engineer will identify which utilities were missed and need to be tied down.
 - Vertically – The Engineer shall identify all utilities that are potential conflicts and that need to be tied vertically. The Engineer will advise the surveyor in writing of the needed vertical ties

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and the surveyor will tie the lines vertically once the surveyor has coordinated the exposure and provide the information to the Engineer.

Services
 Provided By:
SURVEYOR COUNTY

- | | | |
|------------|------------|---|
| <u>YES</u> | <u>NO</u> | (11) Additional Field Surveying as shown below:
(A) <u>IRRIGATION LINES</u> – The surveyor will meet with the Engineer before he ties down any irrigation lines. The Engineer will provide him the existing Irrigation District Maps and the A&M Data of existing irrigation lines that are identified of record. He will follow the sample given to him by the Engineer and tie the structures horizontally and vertically and provide Field Books to the Engineer. |
| | | <u>Driveways and Turnouts</u>
(a) Inventory commercial entrances, public roads and side streets separately.
(b) Obtain centerline station. (Width at R.O.W., PAV'T and existing radius.
(c) Inventory by type (dirt, caliche, gravel or paved). If paved, indicate condition in terms of no patches, has patches or has potholes. Obtain width at R.O.W. line.
(e) Obtain elevations at both edges of the driveway or turnout in line with the side drain. |
| <u>YES</u> | <u>NO</u> | (12) R.O.W. staking (Existing and Proposed @ 1,000 ft. stations P.C.'s P.T.'s and Angle points as per R.O.W. Map) (#5 I.R. 2-ft.) |
| <u>YES</u> | <u>NO</u> | (13) Soil core hole staking |
| <u>YES</u> | <u>NO</u> | (14) Determine changes in topography from voids and outdated maps due to development, erosion, etc. |
| <u>YES</u> | <u>NO</u> | (15) Profiles of existing drainage facilities |
| <u>YES</u> | <u>NO</u> | (16) Measurement of hydraulic opening under existing bridges |
| <u>YES</u> | <u>NO</u> | (17) Obtain elevations of manholes and valves of utilities |
| <u>YES</u> | <u>NO</u> | (18) Provide temporary signs, traffic control, flags, safety equipment, etc. |
| <u>YES</u> | <u>NO</u> | (19) Ties to existing bridges or culverts that may conflict with new construction. |
| <u>N/A</u> | <u>N/A</u> | (20) Bridge widening top of deck and/or top of cap elevations at the Profile Grade Line (PGL) and the edges of slab at bent locations. |
| <u>YES</u> | <u>NO</u> | (21) Inventory signs, mailboxes, and driveways |
| <u>YES</u> | <u>NO</u> | (22) Survey controlled data sheets per TxDOT guidelines. |
| <u>YES</u> | <u>NO</u> | (23) Recover and/or re-establish the existing center line and existing Right-of-Way. Have said existing centerline approved by the Engineer. Provide a digital computer dump of both. |
| <u>YES</u> | <u>NO</u> | (24) Coordinate with the Engineer to set the existing centerline stationing. |
| <u>N/A</u> | <u>N/A</u> | 2. Photogrammetric Products
a. Uncontrolled Photography
(1) Contact Prints
(2) Mosaics
(3) Digital ortho plots
b. Mapping
(1) Planimetric Maps
(2) Contour Maps
(3) Cross Sections
(4) Profiles
(5) Digital Terrain Models (DTM) |

SECTION 7 – ROADWAY DESIGN CONTROLS

Services
Provided By:
ENGINEER COUNTY

- | | | |
|------------|-----------|---|
| <u>YES</u> | <u>NO</u> | 1. Geometric Design |
| <u>NO</u> | <u>NO</u> | a. Horizontal and Vertical Alignment |
| | | b. Schematic Layout |
| | | (1) The location of interchanges, main lanes, grade separations, frontage roads and ramps. |
| | | (2) Develop vertical and horizontal alignment of main lanes, ramps and cross roads at proposed interchanges or grade separations. Frontage road alignment data need not be shown on the schematic; however, it should be developed in sufficient detail to determine R.O.W. needs. The degree of horizontal curves and vertical curve data, including “K” values, shall also be shown for ease of checking. |
| | | (3) A complete explanation of the sequence and methods of stage construction, if proposed, including the initial and ultimate proposed treatment of crossovers and ramps. |
| | | (4) The tentative R.O.W. limits. |
| | | (a) Provide a roadway Design System (R.D.S.) or (GEOPAK) computer tape of the preliminary earthwork to verify R.O.W. requirements. |
| | | (b) Provide a graphics file containing the approved schematic. |
| | | (5) The geometric (pavement cross slopes, lane and shoulder widths, slope rates for fills and cuts) of the typical sections of proposed highway main lanes, ramps, frontage roads, and cross roads. |
| | | (6) Direction of traffic flow on all roadways. |
| | | (7) The geometric of speed change (acceleration, deceleration, climbing) lanes. |
| <u>NO</u> | <u>NO</u> | 2. General Guidelines for Project Development |
| | | a. Prior to preparing detailed plans for a proposed project, a preliminary schematic layout shall be prepared which indicates the general geometric features and location requirements peculiar to the project. An uncontrolled aerial mosaic will be provided for this use. Four copies of the schematic layout shall be submitted through the district to the Design Division for approval and subsequent coordination with the Federal Highway Administration (FHWA) where applicable. No geometric design is to be performed until the COUNTY has given the Engineer written approval of the preliminary schematic layout. |
| | | b. All geometric design shall be in conformance with the State's Design Division, Operations and Procedures Manual, except where variances are permitted in writing by the STATE. |
| | | c. The schematic layout shall include basic information which is necessary for the proper review and evaluation including the items listed above in the checklist for schematic layout. |
| | | d. Handling of traffic during construction shall be a consideration in the development of preliminary designs. |

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Services
 Provided By:
ENGINEER COUNTY

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|---|---|
| <p><u>YES</u> <u>NO</u></p> | <p>3. Pavement Design</p> <p>a. Prior to initiating detailed plan preparations for a project, a preliminary investigation shall be made to determine the approximate section and pavement type to be used for the pavement structure. The Flexible Pavement Design Manual for flexible pavement, “Appendix F” of the Design Division, Operations and Procedures Manual, and the current AASHTO Guide for the Design of Pavement Structures, may be used for this purpose.</p> |
| <p><u>YES</u> <u>NO</u></p> | <p>b. The typical section shall also reflect proposed geometric including pavement cross slopes, lane and shoulder widths, and slope rates whenever this data have not been previously shown on a schematic submission.</p> |
| <p><u>YES</u> <u>N/A</u>
 <u>YES</u> <u>N/A</u></p> | <p>c. Embankment and Subgrade</p> <p>(1) Soil Core Holes (Show cost estimate with Function Code 110)</p> <p>(a) Along center line
 (b) Along center line of each roadway</p> <p>The location and minimum number of soil core holes required for this project are as follows: (To be determined when schematic is being completed)</p> |
| <p><u>YES</u> <u>NO</u></p> | <p>4. Pavement Design (<i>continued</i>)</p> <p>c. Embankment and Subgrade (<i>continued</i>)</p> <p>(2) Identify, interpret and summarize geologic features that affect engineering design (P.I., Sulfate content, % of lime)</p> |
| <p><u>YES</u> <u>NO</u></p> | <p>d. Traffic Data for Pavement Design by STATE</p> |
| <p><u>YES</u> <u>NO</u></p> | <p>e. Basic Design Criteria</p> |
| <p><u>NO</u> <u>NO</u></p> | <p>f. Life Cycle Cost Analysis(es)</p> |
| <p><u>YES</u> <u>NO</u></p> | <p>g. Cost Data</p> |
| <p><u>YES</u> <u>NO</u></p> | <p>h. Pavement Material Properties</p> |
| <p><u>N/A</u> <u>N/A</u></p> | <p>i. Rehabilitation Investigations</p> |
| <p><u>N/A</u> <u>N/A</u></p> | <p>(1) Core Hole Survey (Show cost estimate with Function Code 110)</p> <p>(a) Determine type and depth of existing material, pavement, etc. The Engineer will determine whether to salvage A.C.P. and FLEXBASE as well as their properties and provide this information to TxDOT.</p> |

SECTION 8 – DRAINAGE

Services
 Provided By:
ENGINEER COUNTY

All hydraulic design shall be in accordance with the TxDOT’s Hydraulic Manual, except where variances are permitted in writing by the COUNTY.

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| <p><u>NO</u> <u>NO</u>
 <u>YES</u> <u>NO</u></p> | <p>1. Hydrologic Studies, Discharges</p> <p>a. Drainage area maps showing existing conditions and proposed improvements.
 b. Hydrologic data/discharge determination</p> |
| <p></p> | <p>2. Hydraulic Drainage Study and Documentation</p> |

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- | | |
|---|---|
| <u>YES</u> <u>NO</u> | a. Hydraulic computations
(1) Storm water detention available within the R.O.W. (linear ft. along side drain ditch).
(2) Storm water detention required outside the R.O.W. (as per HCDD#1)
(3) Culverts
(4) Bridge waterways
(5) Channels
(6) Storm sewers/inlets
(7) Pump stations
(8) Storm Water Management facilities
(9) Other
(a) Irrigation Canals/Siphons |
| <u>NO</u> <u>NO</u>
<u>YES</u> <u>NO</u>
<u>YES</u> <u>NO</u>
<u>YES</u> <u>NO</u>
<u>NO</u> <u>NO</u>
<u>NO</u> <u>NO</u>
<u>YES</u> <u>NO</u> | b. Hydraulic report(s)
c. Federal Emergency Management Agency (FEMA) floodway requirements
d. Determine impact of proposed drainage plan on the following receiving stream(s)
(1) Hidalgo County Drainage District Outfalls
(2) All Irrigation District Outfalls impacted |
| <u>NO</u> <u>NO</u>
<u>YES</u> <u>NO</u>
<u>YES</u> <u>NO</u> | |
| <u>YES</u> <u>NO</u> | 3. Storm Water Pollution Prevention Plan (SW3P) |

SECTION 10 – MISCELLANEOUS (ROADWAY)

Services
 Provided By:
ENGINEER COUNTY

- | | |
|----------------------|--|
| <u>YES</u> <u>NO</u> | 1. Traffic Control Plan, Detours and Sequence of Construction
Traffic Control Plans (TCP) are required for all projects. A detailed TCP shall be developed when traffic handling during construction involves complications for which a feasible solution is not covered by the Texas MUTCD or the current Barricade and Construction (B.C.) Standards. The following items are required on all Traffic Control Plan Layouts:
a. The sequence of construction and method of handling traffic during each phase.
b. The existing and proposed traffic control devices that will be used to handle traffic during each construction sequence. Include signals, regulatory signs, warning signs, construction warning signs, guide signs, route markers, construction pavement markings, channelizing devices, portable changeable message signs, flashing arrow boards, barricades, barriers, etc.
c. The proposed traffic control devices (stop signs, signals, flag person, etc.) at grade intersections during each construction sequence.
d. Where detours are provided, typical cross sections shall be shown.
e. Road construction work hours shall be developed after an investigation of the traffic volumes has been performed. |
| <u>YES</u> <u>NO</u> | 2. Illumination
a. Tunnel Illumination Layout and Circuit Layout |
| <u>YES</u> <u>NO</u> | 3. Illumination (<i>continued</i>)
c. General Guidelines for Illumination (If applicable)
The ENGINEER shall submit to the COUNTY, well in advance of PS&E due date, the roadway illumination and electrical circuit layout sheets for review by the STATE. Two copies of the layout sheets are to be submitted. One copy will be |

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returned to the Engineer showing corrections that are to be made by the ENGINEER. When final plan submission is made, the ENGINEER shall provide a written statement regarding completion of the corrections.

YES NO 4. Special Utility Details (Irrigation lines)

EXHIBIT "B"
FEE PROPOSAL
Hidalgo County Precinct 2: Recreational Trails Connectivity Project
Work Authorization #2

<i>WA #2 - Survey, Geotech., and PS&E</i>		MANHOURS							Total Hours	Subtotal
		SENIOR PROJECT MANAGER	SENIOR ENGINEER	PROJECT ENGINEER	EIT	ENGINEER TECH	CADD OPERATOR	ADMIN/ CLERICAL		
TASKS										
Segment 1: Mission Route Length (MI) = 9.519										
1	Survey Fee (Aerial Flight Data Processing, Base Map, Full Topo, and Utilities)									\$110,000.00
2	Geotechnical Evaluation; Road Crossings, Soil Nail Parameters, Pavement Design									\$38,676.66
3	Hydrology & Hydraulics of Proposed Trail on Mission Inlet	40	32	60			10	142	\$25,442.24	
4	PS&E Development	240	360	580	910	540	540	72	3,242	\$387,276.54
5	Permitted Utilities Coordination to Adjust	24	20	40				20	104	\$16,995.88
6	Meetings & Coordination w/ HCDD#1 on Mission Inlet JUA/Permit & Conway Crossing	24	16	36				18	94	\$15,476.56
7	Coordination & Outreach with Affected Municipalities (McAllen & Mission)	10	8	16				10	44	\$7,036.56
8	Meetings & Coordination w/ P2 & P3 in Support Project Development Activities	40	20	32				20	112	\$19,699.80
SUB-TOTAL								3,738	\$620,604.24	
Segment 2 : McAllen Ext Route Length (MI) = 3.197										
1	Survey Fee (Aerial Flight Data Processing, Base Map, Full Topo, and Utilities)									\$40,000.00
2	Geotechnical Evaluation; Road Crossings, & Pavement Design									\$34,655.26
3	Hydrology & Hydraulics of Proposed Trail (Mission Inlet & IBWC Floodway)	24	20	40				10	94	\$16,287.68
4	PS&E Development	120	200	80	160	500	500	60	1,620	\$176,907.60
5	Permitted Utilities Coordination to Adjust	12	10	20				10	52	\$8,497.94
6	Meetings & Coordination w/ HCDD#1, HCID#2, and IBWC	18	16	30				16	80	\$13,017.30
7	Coordination & Outreach with Affected Municipalities (McAllen)	10	8	16				10	44	\$7,036.56
8	Meetings & Coordination w/ P2 in Support Project Development Activities	8	8	16				10	42	\$6,553.72
SUB-TOTAL								1,932	\$302,956.06	
Segment 3 : Hidalgo Ext Route Length (MI) = 2.928										
1	Survey Fee (Aerial Flight Data Processing, Base Map, Full Topo, and Utilities)									\$35,000.00
2	Geotechnical Evaluation; Road Crossings, Soil Nail Parameters, Pavement Design									\$10,618.50
3	Hydrology & Hydraulics of Proposed Trail on IBWC Floodway	32	28	50				10	120	\$21,264.10
4	PS&E Development	36	40	200	320	220	180	40	1,036	\$109,377.52
5	Permitted Utilities Coordination to Adjust	18	16	30				16	80	\$13,017.30
6	Meetings & Coordination w/ HCDD#1 and IBWC	12	10	20				10	52	\$8,497.94
7	Coordination & Outreach with Affected Municipalities (McAllen, Hidalgo, Pharr)	10	8	16				10	44	\$7,036.56
8	Meetings & Coordination w/ P2 in Support Project Development Activities	12	12	22				16	62	\$9,611.70
SUB-TOTAL								1,394	\$214,423.62	
Labor Hours		690	832	1304	1390	1260	1220	368	7,064	
Hourly Base Rates		\$ 75.00	\$ 62.00	\$ 45.00	\$ 29.00	\$ 25.00	\$ 23.00	\$ 22.00		
Contract Rate FY2022		\$ 241.42	\$ 199.57	\$ 144.85	\$ 93.35	\$ 80.47	\$ 74.03	\$ 70.82		
Total Labor Costs		\$ 166,579.80	\$ 166,042.24	\$ 188,884.40	\$ 129,756.50	\$ 101,392.20	\$ 90,316.60	\$ 26,061.76		\$1,137,983.92

Direct Expenses	Units	
Mileage (\$0.56/mile)	3,528	\$ 1,975.68
Aerial Drone Flight (\$250/hr)	40	\$ 10,000.00
Total Direct Expenses		\$ 11,975.68

WA#2 - Total Cost \$ 1,149,959.60

Exhibit B-1
Geotechnical Field and Laboratory Services
Engineering Services - Labor Hours

	SERVICES		UNITS	UNITS	UNIT COST	TOTAL COST
I.	Project Manage / Review / ODE					
	A. Principal / Project Manager / Review		Hours			
	B. Senior Project Engineer (Staff)		Hours			
	C. Typing and Clerical (Report)		Hours			
	D. Lodging (Est 3 Nights - 3 person Crew)		Nights			
	E. Mileage		Mile			
	F. Air Travel		Trip			
	G. Per-Diem (Meals) (Match Lodging)		Each			
II.	Utility Clearances / Boring Locates					
	A. Technician (Locate Borings)(Util Clr)		Hours	2	\$ 83.69	\$ 167.38
	B. Staff Engineer/Geologist/Scientist		Hours			
	C. Rebar (stakes with impalement covers)		Cost +12.5%			
	D. Vehicle Charge		Mile			
	E. Mileage		Mile	20	\$ 0.56	\$ 11.20
	F. Survey Locate Borings (X,Y,Z)		LS			\$ -
	G. Traffic Control (xxx)		LS			\$ -
III.	Field Exploration					
A	Mobilization/Demobilization		Day	2	\$ 475.00	\$ 950.00
B	Field Exploration					
	1. ASTM Drill & SPT/Tube Sampling (SS)		Feet	129	\$ 38.00	\$ 4,902.00
	1a. Field Coring ACP (ASTM D3549)		Ea.			\$ -
	2. TxDOT TCP Field Test (BL/ft)		Ea.			\$ -
	3. Field Logger / Engineering Tech		Hour	16	\$ 83.69	\$ 1,339.04
	4. 24 Hr. Water Level Observations		Hour			\$ -
	5. Piezometers		Each			\$ -
	6. Supp. Vehicle-Trailer, Tools Water Supply		Mile	40	\$ 1.75	\$ 70.00
	7. Vehicle Charge		Mile	40	\$ 0.56	\$ 22.40
C	Miscellaneous Field Services					\$ -
IV.	Engineering Data Analysis / Report					
	1. Staff Engineer		Hours			
	2. Sen. Eng Tech. (Soil Classification)		Hours	3	\$ 122.32	\$ 366.96
	3. Sen. Eng Tech. (Logs & Summaries)		Hours	3	\$ 122.32	\$ 366.96
	4. Moisture Content		Ea.	43	\$ 12.00	\$ 516.00
	5. Atterberg Limits		Ea.	26	\$ 135.00	\$ 3,510.00
	6. -200 Sieve - Fines Content		Ea.	26	\$ 60.00	\$ 1,560.00
	7. Sulfate Content		Ea.	11	\$ 95.00	\$ 1,045.00
	8. Lime Series Testing		Ea.	5	\$ 400.00	\$ 2,000.00
						\$ -
						\$ -
						\$ -
						\$ -
Project Sub-Total (Geo Field and Lab)						\$ 16,826.94

Exhibit B-2
Geotechnical Field and Laboratory Services
Prop Geo Inv for HC Pct 2 H&B - McAllen Extension

	SERVICES		UNITS	UNITS	UNIT COST	TOTAL COST
I.	Project Manage / Review / ODE					
	A. Principal / Project Manager / Review		Hours			
	B. Senior Project Engineer (Staff)		Hours			
	C. Typing and Clerical (Report)		Hours			
	D. Lodging (Est 3 Nights - 3 person Crew)		Nights			
	E. Mileage		Mile			
	F. Air Travel		Trip			
	G. Per-Diem (Meals) (Match Lodging)		Each			
II.	Utility Clearances / Boring Locates					
	A. Technician (Locate Borings)(Util Clr)		Hours	2	\$ 83.69	\$ 167.38
	B. Staff Engineer/Geologist/Scientist		Hours			
	C. Rebar (stakes with impalement covers)		Cost +12.5%			
	D. Vehicle Charge		Mile			
	E. Mileage		Mile	20	\$ 0.56	\$ 11.20
	F. Survey Locate Borings (X,Y,Z)		LS			\$ -
	G. Traffic Control (xxx)		LS			\$ -
III.	Field Exploration					
A	Mobilization/Demobilization		Day	5	\$ 475.00	\$ 2,375.00
B	Field Exploration					
	1. ASTM Drill & SPT/Tube Sampling (SS)		Feet	218	\$ 38.00	\$ 8,284.00
	1a. Field Coring ACP (ASTM D3549)		Ea.			\$ -
	2. TxDOT TCP Field Test (BL/ft)		Ea.	40	\$ 6.00	\$ 240.00
	3. Field Logger / Engineering Tech		Hour	40	\$ 83.69	\$ 3,347.60
	4. 24 Hr. Water Level Observations		Hour			\$ -
	5. Piezometers		Each			\$ -
	6. Supp. Vehicle-Trailer, Tools Water Supply		Mile	100	\$ 1.75	\$ 175.00
	7. Vehicle Charge		Mile	100	\$ 0.56	\$ 56.00
C	Miscellaneous Field Services					\$ -
IV.	Engineering Data Analysis / Report					
	1. Staff Engineer		Hours			
	2. Sen. Eng Tech. (Soil Classification)		Hours	5	\$ 122.32	\$ 611.60
	3. Sen. Eng Tech. (Logs & Summaries)		Hours	5	\$ 122.32	\$ 611.60
	4. Moisture Content		Ea.	49	\$ 12.00	\$ 588.00
	5. Atterberg Limits		Ea.	26	\$ 135.00	\$ 3,510.00
	6. -200 Sieve - Fines Content		Ea.	26	\$ 60.00	\$ 1,560.00
	7. Sulfate Content		Ea.	7	\$ 95.00	\$ 665.00
	8. Lime Series Testing		Ea.	3	\$ 400.00	\$ 1,200.00
	9. Full Sieve and Hydrometer		Ea.	4	\$ 90.00	\$ 360.00
						\$ -
						\$ -
						\$ -
Project Sub-Total (Geo Field and Lab)						\$ 23,762.38

