



**CENTRAL TEXAS
Regional Mobility Authority**

AGENDA ITEM #7 SUMMARY

Approve a new work authorization with Atkins North America, Inc., for engineering services relating to the design and construction of a 1.9 mile roadway from SH 71 south to Pearce Lane.

Strategic Plan Relevance: Regional Mobility, Economic Vitality

Department: Engineering

Associated Costs: \$2,874,930

Funding Source: Travis County

Board Action Required: Yes

Description of Matter:

Atkins North America, Inc. will provide General Engineering Consultant services related to project activities required to assist the Mobility Authority in the development of a 1.9 mile roadway from SH 71 south to Pearce Lane for Travis County under an interlocal agreement with Travis County. These efforts will include, but not be limited to design; environmental evaluations and approvals; utility coordination; construction contract procurement/letting; construction management, oversight, and inspection services.

Reference documentation: Draft Resolution
Work Authorization No. 10

Contact for further information: Wesley M. Burford, P.E., Director of Engineering

**GENERAL MEETING OF THE BOARD OF DIRECTORS
OF THE
CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY**

RESOLUTION NO. 13-___

**APPROVING A NEW WORK AUTHORIZATION WITH ATKINS
NORTH AMERICA, INC., FOR ENGINEERING SERVICES RELATING TO
THE DESIGN AND CONSTRUCTION OF A 1.9 MILE ROADWAY
FROM SH 71 SOUTH TO PEARCE LANE.**

WHEREAS, Atkins North America, Inc., (“Atkins”) serves as a general engineering consultant to the Mobility Authority under the Agreement for General Consulting Civil Engineering Services effective January 1, 2010 (the “GEC Agreement”); and

WHEREAS, on October 1, 2013, the Travis County Commissioners Court enacted a resolution requesting and authorizing negotiation of an interlocal agreement with the Mobility Authority for construction, at Travis County’s cost, of a new road extending approximately 1.9 miles south from SH 71 to Pearce Lane (the “Southeast Travis County Road Project”); and

WHEREAS, if the Mobility Authority enters into an interlocal agreement with Travis County, the Executive Director and Atkins have discussed and agreed to a new work authorization under the GEC Agreement to provide general engineering consultant services for development of the Southeast Travis County Road Project; and

WHEREAS, the Executive Director recommends approval of the work authorization attached as Exhibit 1 to this resolution.

NOW THEREFORE, BE IT RESOLVED, that the proposed work authorization with Atkins is approved; and

BE IT FURTHER RESOLVED, that the Executive Director may finalize and execute for the Mobility Authority the proposed work authorization in the form or substantially the same form as Exhibit 1.

Adopted by the Board of Directors of the Central Texas Regional Mobility Authority on the 30th day of October, 2013.

Submitted and reviewed by:

Approved:

Andrew Martin
General Counsel for the Central
Texas Regional Mobility Authority

Ray A. Wilkerson
Chairman, Board of Directors
Resolution Number: 13-___
Date Passed: 10/30/13

Exhibit 1

PROPOSED WORK AUTHORIZATION

[on the following 19 pages]

EXHIBIT D
WORK AUTHORIZATION

Work Authorization No. 10

This Work Authorization is made as of this 30th day of October, 2013, under the terms and conditions established in the AGREEMENT FOR GENERAL CONSULTING ENGINEERING SERVICES, dated as of January 4th, 2010 (the Agreement), between the **Central Texas Regional Mobility Authority** (Authority) and **Atkins North America, Inc.** (formerly Post, Buckley, Schuh & Jernigan, inc.) (GEC). This Work Authorization is made for the following purpose, consistent with the services defined in the Agreement:

*Maha Loop/Elroy Road (Phase I) Project
Design / Environmental Evaluations and Approvals / Project Oversight / Construction
Procurement/Letting / Construction Management, Oversight, Inspection, and Acceptance*

Section A. - Scope of Services

A.1. GEC shall perform the following Services:

Please reference Attachment A – Services to be Provided by the GEC

A.2. The following Services are not included in this Work Authorization, but shall be provided as Additional Services if authorized or confirmed in writing by the Authority.

Not applicable.

A.3. In conjunction with the performance of the foregoing Services, GEC shall provide the following submittals/deliverables (Documents) to the Authority:

Please reference Attachment A – Services to be Provided by the GEC

Section B. - Schedule

GEC shall perform the Services and deliver the related Documents (if any) according to the following schedule:

Services defined herein shall begin October 30, 2013 and shall be substantially complete by April 30, 2015. This Supplemental Work Authorization will not expire until all tasks associated with the Scope of Services are complete.

Section C. - Compensation

C.1. In return for the performance of the foregoing obligations, the Authority authorizes to the GEC an authorized amount \$2,874,930 based on Attachment B- Fee Estimate. Compensation for Direct Expenses under this Work Authorization which are incurred as part of normal business operations (i.e., internal document

reproduction, internal plotting, travel and parking associated with local meetings, etc.) will be reimbursed on a Lump-Sum basis in the amount of: \$54,460.00 (with \$3,025.56 to be invoiced monthly). Profit will be 12% for all services. Compensation shall be in accordance with the Agreement.

C.2. Compensation for Additional Services (if any) shall be paid by the Authority to the GEC according to the terms of a future Work Authorization.

Section D. - Authority’s Responsibilities

The Authority shall perform and/or provide the following in a timely manner so as not to delay the Services of the GEC. Unless otherwise provided in this Work Authorization, the Authority shall bear all costs incident to compliance with the following:

Please reference Attachment A – Services to be Provided by the GEC

Section E. - Other Provisions

The parties agree to the following provisions with respect to this specific Work Authorization:

Not applicable.

Except to the extent expressly modified herein, all terms and conditions of the Agreement shall continue in full force and effect.

Authority: Central Texas Regional Mobility Authority

GEC: Atkins North America, Inc.

By: Mike Heiligenstein

By: _____

Signature: _____

Signature: _____

Title: Executive Director

Title: _____

Date: _____

Date: _____

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ATTACHMENT A – SCOPE OF SERVICES

SERVICES TO BE PROVIDED BY THE GENERAL ENGINEERING CONSULTANT (GEC)

Work to be performed by the GEC under this contract consists of providing engineering services required for the project development and construction of Maha Loop Road (Phase 1) between the intersection of SH 71 and Pearce Lane. Project consists of the construction of a segment of a new 3 lane roadway which can accommodate a 5 lane ultimate section between the limits listed above. The GEC shall prepare plans, details and compute quantities to include demolition, roadway and structures design, grading and paving, drainage, water quality/detention and provide construction services.

The GEC shall collect, review and evaluate the available existing data pertaining to the project and prepare the PS&E in accordance with the requirements and policies of the CTRMA and Travis County. The GEC will prepare bidding packages and assist the Authority in taking bids for construction. Once awarded, the GEC will provide construction inspection and acceptance services.

1.0 Project Management and Administration

The GEC will perform project management, administrative and coordination duties, including contract administration, reporting, facilitate and take meeting minutes of required meetings and telephone conversations, and other related administrative tasks (e.g., direct costs) associated with the Project, including:

1.1. Project Management

The GEC will provide staff to manage the daily activities of the program and will serve as the primary contact between the Authority, Travis County, design consultants, third party consultants, utility companies, public agencies, and the general public.

1.2. Coordinate, Procure, and Administer Work Authorizations

Prepare contracts as required between the GEC and the Authority and GEC and subconsultants. Monitor and supervise GEC subconsultant activities, review all work products prepared by subconsultant for accuracy and consistency, review and approve subconsultant reports and invoices.

1.3. Record Keeping and File Management

Develop and implement a document control plan and maintain records and files related to the Project throughout the duration of the Services. Transfer project files to the Authority upon completion of the work or as directed by the CTRMA.

1.4 Project Schedule Development and Updates

Prepare a detailed, graphic schedule linking work authorization tasks, subtasks, critical dates, milestones, deliverables, and Travis County scheduled review requirements. The project schedule will be in a format that depicts the order and inter-dependence of the various tasks, subtasks, milestones and deliverables for each of the tasks identified therein. Progress will be reviewed periodically, and should these reviews indicate a substantial change in progress, a schedule recovery strategy will be developed and implemented and the schedule will be revised accordingly.

1.5 Project Reporting

Prepare and issue monthly status reports on the Project's status which will document any issues, delays encountered, and corrective actions as necessary. Will provide a monthly update to the Authority and Travis County on key milestones accomplished during the preceding month, meetings and key

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activities for the upcoming month, and identify outstanding issues requiring resolution. Track, monitor, and report on contracts and budgets for the GEC and sub consultants.

2.0 Environmental Study / Document Services

2.1 Environmental Assessment (EA)

- Facilitate EA project status meetings with Travis County and other Agencies as needed.
- Complete EA document for submittal to Travis County.
- Update traffic information and data for specific elements of the EA.
- Develop Figures for EA.
- Facilitate Public Involvement Support as needed.

2.2 Public Involvement Support

- Public Meetings
- Public Hearing

3.0 Design Services

3.1 Design Survey

- The survey will cover the width of the proposed right-of-way plus 100' east and west and will include the following: topography with 1 foot contour intervals, natural and man-made features, overhead utilities, visible evidence of utilities, top of nut elevations of water valves, sewer invert elevations and flows direction, and roadway features. Additionally the design survey will extend 200' down side streets and intersections, right-of-way to right-of-way. Show the connection of visible overhead features. All located objects and elevation shots will be on the same horizontal and vertical basis (Texas State Plane Coordinate System, Central Zone, NAD83, (93 HARN), adjusted to surface location). Trees will be located per City of Austin standards. Locate approximately 20 boreholes after they have been drilled. Permanent control will be set with a description of each provided.
- Six creek cross-sections will be provided to assist in hydraulic calculation for each creek crossing. The locations of which will need to be provided at the time of survey.

3.2 Roadway Design

- Preliminary 30% Schematic. The GEC shall prepare a preliminary schematic for a 5-lane arterial roadway section for review. The preliminary schematic shall consist of the horizontal geometric data, vertical geometric data, water surface elevations, bridge clearances and typical sections. The GEC shall identify all design exceptions and the GEC shall note the exceptions on the schematic.
- Roadway Design. The GEC shall provide roadway plan and profile drawings using CADD standard. The drawings shall consist of a planimetric file of existing features and files of the proposed improvements. The roadway base map shall contain line work that depicts existing surface features obtained from the topographic base drawing. Existing major subsurface and surface utilities shall be shown. All right-of-way lines shall be shown.

The plan view shall contain the following design elements:

- Calculated roadway centerline for Maha Loop Road. Horizontal control points shall be shown. Geopak shall be used to calculate alignments.

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- Pavement edges for all improvements (cross streets and driveways).
- Lane and pavement width dimensions.
- Proposed structure locations, lengths, and widths.
- Direction of traffic flow on all roadways. Lane lines and/or arrows indicating the number of lanes shall also be shown.
- Drawing scale shall be 1"=100'.
- ROW lines and easements.
- Begin/end superelevation transitions and cross slope changes.
- Limits of riprap, block sod, and seeding.
- Existing utilities, structures and easements.
- Benchmark information.
- Radii call outs, curb location, guard fence, crash safety items and American with Disabilities Act Accessibility Guidelines (ADAAG) compliance items.

The profile view shall contain the following design elements:

- Calculated profile grade for proposed Maha Loop Road. Vertical curve data, including "K" values shall be shown.
 - Existing profiles along the proposed centerline.
 - Water surface elevations at major stream crossings for 50-, and 100- year storms.
 - Drawing vertical scale to be 1"=10'.
- **Typical Sections.** Typical sections shall be required for all proposed roadways and structures. Typical sections shall include width of travel lanes, shoulders, outer separations, border widths, curb offsets, and ROW. The typical section shall also include PGL, centerline, pavement design, longitudinal joints, side slopes, sodding/seeding limits, concrete traffic barriers and sidewalks, if required, station limits, riprap, limits of embankment and excavation, etc.
 - **Cross Streets.** The GEC shall tie to the existing pavement at the intersections of SH 71 and Pearce Lane.
 - **Cut and Fill Quantities.** The GEC shall develop an earthwork analysis to determine cut and fill quantities and provide final design cross sections at 100 feet intervals for the construction project limits. These construction cross sections shall be delivered in standard Geopak format on 11"x17" sheets along with the electronic files. The GEC shall provide all criteria and input files used to generate the design cross sections. Cross sections and quantities shall consider existing pavement removals. Annotation shall include at a minimum existing/proposed right of way, side slopes (front and back), profiles, etc.
 - **Pedestrian and Bicycle Facilities.** The GEC shall design a 5 foot pedestrian sidewalk along with a 6 foot bicycle facilities along the southbound travel length for the entire length of the project unless otherwise directed. All pedestrian/bicycle

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facilities will be designed in accordance with the latest Americans with Disabilities Act.

- Estimate. The GEC shall independently develop and submit a cost estimate at the 30% (for both the rural and urban 3-lane sections), 90%, and final PS&E submittals.
- Specifications. The GEC shall identify the need for any special specifications, and special provisions. The GEC shall provide general notes, special specifications, and special provisions in rich text format.
- Miscellaneous Plans. The GEC shall prepare the title sheet and the index of sheets for the 90%, and final submittals.

3.3 Structures

- Bridge Layout. The GEC shall prepare bridge layout plans and elevations for all bridge types listed below in accordance with the latest edition LRFD Design Manual.
- Geometric Data. The GEC will develop a complete geometric analysis at all bridges (electronic and hard copy deliverables), including any applicable updates to accommodate geometric changes. The analysis shall include:
 - RDS files - all current files with updates.
 - Limits of super elevation transitions and limits of super elevations. Use linear rotation on structures.
 - Limits of edge of slab tapers, stations and offsets to the edge of slabs.
 - Geometric data for at grade roadways beneath structures.
 - Natural and proposed ground line cross sections at each bent location.
 - Top of bridge deck elevations along centerline of bent, at all bents.
 - Provide a sufficient number of points to establish crowns and cross slopes.
 - Verification of structure clearances (horizontal and vertical) at all critical points. Provide a list of assumed superstructure depths used in vertical clearance calculations for each bridge.
- Bridge Design Plans. The GEC shall develop final design plans for the bridges:
 - Perform final bridge design calculations for the superstructure elements to determine the minimum construction depth.
 - Determine the bottom of footing elevations for the substructure(s). Perform preliminary design calculations for the abutments and wingwall elements including the foundation design.
 - Prepare the final bridge design calculations for the substructure elements and foundations.
 - Prepare the final detail drawings for the following elements:
 - Foundation layouts

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- Abutments
- Bent layouts and details
- Wingwalls and wingwall foundations
- Framing Plan
- Slab layout and details
- Rebar list and quantities
- Beam Layout
- Miscellaneous details
- Summary of quantities

3.4 Hydrology and Hydraulics

- The GEC shall coordinate with Travis County to develop a drainage design criteria summary for the project.
- Drainage Impact Study- The GEC shall prepare a Drainage Impact Study for the Project which includes:
 - Data Collection
 - Existing Conditions Hydrologic and Hydraulic Modeling
 - Proposed Conditions Hydrologic and Hydraulic Modeling
 - Mitigation Alternatives
 - Impact Study
- Roadway Drainage
 - Develop External Drainage Area Maps
 - Prepare Detention Pond Layouts
 - Prepare Detention Pond Details
- Bridge and Culvert Plan Sheets
 - Culvert Layouts: The GEC will prepare culvert plan and profile layouts at a scale of 1"=40'H and 1"=20'V that will depict culvert geometry for construction, as well as the applicable hydraulic information;
 - Hydraulic Data Sheets: The GEC will prepare hydraulic data sheets for bridges over creeks and culverts within the project.
- Scour Analysis - The GEC will conduct scour analysis of bridge creek crossings for contraction scour conditions and local scour of piers and will provide estimates of total scour depth for use in the design process. GEC shall utilize borings from the geotechnical investigation to determine proper treatment under the bridge. The results of the scour analysis shall be included in the Impact Study and plan sheets shall be prepared.

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- Storm Water Plan Sheets - The GEC will analyze and design both open channel (ditches) and enclosed storm drains. Computations and design information will be presented in the appropriate plan sheets.
- Erosion and Sedimentation Controls and SWPPP:
 - The GEC shall prepare temporary erosion control plans for the length of project at 1"=100' scale. Temporary storm water management devices will be needed to minimize the sediment runoff during construction of this project. The anticipated design components to be utilized on this project are silt fence rock filter dams, sediment traps, and construction exits. One temporary erosion control plan will be developed with notes that indicate that the contractor is responsible for phasing the devices along with the construction sequencing;
 - The GEC shall prepare permanent erosion control to be shown on the temporary erosion and sedimentation control sheets. The plans will show all proposed revegetation, including seeding or sodding. The plans will also include all riprap (concrete and stone);
 - A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for this job in accordance with TCEQ regulations and Travis County requirements;
 - Erosion Control Details - Erosion control details will be prepared for any related items that are not covered by standard details.
- Permanent Water Quality: The GEC will conduct hydrologic studies to determine the discharges, and will perform the hydraulic design required for the proposed sizing of all selected BMPs. Considering the current ROW width (114 feet) and the location of the project within the City of Austin ETJ, it is assumed that BMP will be required to be sedimentation filtration ponds. Six earthen ponds are assumed, two at each of the major outfalls.
 - The GEC will develop treatment calculations and plan summaries for the BMPs;
 - The GEC will develop construction plans for the BMPs.
- Project Technical Specifications: The GEC will prepare technical specifications for the drainage and water quality project components.
- Preparation of HEC-RAS CLOMR (if needed) and LOMR models –The models will be prepared in HEC-RAS using the FEMA Effective Models:
 - Duplicate Effective Model;
 - Corrected Effective Model;
 - Existing Conditions Model;
 - Proposed Conditions Model
- Conditional Letter of Map Revision Application (If Required) – Prepare and process a CLOMR through the Federal Emergency Management Agency (FEMA).
 - Prepare the application including:
 - MT-2 Form 1;
 - MT-2 Form 2;

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- MT-2 Form 3;
- Payment Information Form;
- Work Map;
- Process the application
 - Provide a PDF review copy of CLOMR application;
 - Provide four (4) copies of the complete CLOMR application to Travis County for signatures and submittal to FEMA;
- Submittal and Processing
 - Address comments;
 - Resubmittal;
 - Meetings - Anticipate one meeting to review the CLOMR application with Travis County.
- Letter of Map Revision Application – Prepare and process a LOMR through the Federal Emergency Management Agency (FEMA).
 - Prepare the application including:
 - MT-2 Form 1;
 - MT-2 Form 2;
 - MT-2 Form 3;
 - Payment Information Form;
 - Work Map;
 - Process the application
 - Provide a PDF review copy of LOMR application;
 - Provide four (4) copies of the complete LOMR application to Travis County for signatures and submittal to FEMA;
 - Submittal and Processing
 - Address comments;
 - Resubmittal;
 - Meetings - Anticipate one meeting to review the LOMR application with Travis County.

3.5 Traffic Control Plan Preparation

- Determine proper traffic control requirements based on County input, the City of Austin Traffic Control Standards, and the Texas Manual on Uniform Traffic Control Devices (TMUTCD). Traffic control requirements may include road closures, land closures, sidewalk closures, flaggers, temporary signing, pavement markings, pedestrian protection, and barricade devices.

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- A TCP will be prepared for the proposed roadway construction. The TCP Plan is assumed to be required to address construction at the tie-in locations of Maha Loop Road to State Highway 71 and Pearce Lane only. It is assumed that any additional traffic control measures along the proposed construction route will not be required and are not included in this scope of work
- The TCP will work to maintain minimal impact on existing traffic operations in the vicinity of the site. The plan will consider vehicular and pedestrian (if any) routes near the project. In addition, consideration will be given to construction traffic entering and exiting staging area.

3.6 Public Signage and Pavement Marking Plans

The proposed project involves the planning, design and construction of signage and pavement markings associated with the proposed roadway design, which will be part of the dedicated improvements to the public for operation and maintenance by Travis County once construction is complete and the mandatory warranty period has expired.

- Prepare Engineering Construction Documents in 11x17 format which will illustrate all necessary signage and pavement markings. Requirements will be based on County input, the City of Austin Traffic Control Standards, TxDOT and the TMUTCD.
- Coordinate with TxDOT and Travis County to determine appropriate locations for all underground conduits and associated structures to accommodate any future traffic signal plans for intersection of State Highway 71 and Maha Loop.

3.7 Geotechnical Explorations and Pavement Design

- Bridge - 4 borings to 80 ft & 4 borings to 60 ft spaced
- Abutment walls - 2 borings to 40 ft (used in combination with closest bridge borings)
- Roadway - 16 borings to 10 ft
- All borings sampled using tube samplers, SPT, and coring (if shale is encountered). TxDOT cone performed at 5-ft intervals from top to bottom of boring.
- Two piezometers installed at abutment wall borings to monitor groundwater depths over time.
- Appropriate lab testing to evaluate drilled pier foundations, MSE wall foundations and backfill, and paving recommendations including possible lime/cement treatment options.
- Prepare pavement design based on roadway classification and projected traffic volumes.

4.0 Construction Supervision, Inspection and Testing

The GEC will be the single point of contact between the CTRMA and the respective Contractor(s), acting as an extension of CTRMA staff by providing qualified technical and professional personnel to perform the duties and responsibilities assigned under the terms of this Agreement. The GEC shall not control or direct the construction under the construction contract. Field inspections, testing and oversight reviews by

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the GEC will not relieve the Contractor of sole responsibility for the means and methods of construction, or for health or safety precautions in connection with the work under the construction contract.

4.1 Construction Inspection and Engineering

The GEC will provide quality control and assurance oversight for the construction of the project through construction inspection and engineering services. Included with this task will be the following efforts:

- Review the Contractor's plan for construction Quality Control to be used in the field.
- Inspect Contractor's construction operations.
- Maintain diary and associated required documentation.
- Schedule and hold Pre-Construction conference for the project.
- Document pre-project conditions via still photography and video.
- Review concrete, asphalt and lime mix designs as submitted by the Contractor for concurrence with contract documents as required by the project design and specifications.
- Coordinate, prepare, and attend weekly Project Construction Progress Meetings with the Contractor. Prepare meeting minutes and required action items for distribution and archive.

4.2 Project Controls

- Tracking Database - Maintain the tracking database for correspondence, transmittals, requests for information, meeting minutes, action items, submittals, Inspector daily reports, project diary, project schedule, change orders, pay estimates, lien waivers, shop drawings, working drawings, erection drawings, catalog cut sheets, mix designs, non-conformance reports, payment certifications, Insurance and Bonds, issues, material test data, schedules, audits, related technical data, and issues associated with the Project.

4.3 Materials Testing

GEC shall provide the following construction materials testing services on an as-needed basis for Maha Loop, from Pearce to SH71, Project. The testing frequency will be based on the TxDOT Guide Schedule of Sampling and Testing or as directed by the Client or Client's representative.

- Soils (Laboratory):
 - Perform moisture/density relationship tests, proctors (method as required by project specification), for each type of material or as requested by the Client.
 - Perform Atterberg limits (Tex-104, 105, & 106-E) determination for each type of material or as requested by the Client.
 - Perform sieve analysis (Tex-110-E) for each type of material or as requested by the Client
 - Perform material verification testing as required or requested including sieve analysis, Atterberg limits, Texas triaxial, wet ball mill, bar linear shrinkage, soil-lime compression, resistivity of soils, soil pH, sulfate content of soils, etc.

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- Soils (Field):
 - Perform in-place nuclear density tests (Tex-115-E) as specified by construction documents or per 3, 000 CY per lift of flexible base or as requested by the Client
- Hot Mix Asphaltic Concrete:
 - Test each type of HMAC on a lot basis. A production lot consists of 4 sublots and on lot will be 1,000 tons or fraction placed per type of material or as requested by the Client. Each lot will be tested for extraction/gradation, asphalt content, VMA and laboratory density.
 - Test two (2) asphalt cores for each subplot of asphaltic concrete placement. Cores shall be used to verify thickness and in-place density for asphalt.
- HMAC Aggregates:
 - Perform HMAC aggregate verification testing as required or requested by the Client including sieve analysis, decantation, L.A. abrasion, magnesium sulfate soundness, sand equivalent, organic impurities, deleterious materials, acid insoluble residues, micro deval, flat & elongated particles, coarse aggregate angularity, plasticity index, bar linear shrinkage, etc.
- Concrete:
 - Sample, mold, cure, and test one (1) set of four (4) concrete compressive strength cylinders for every 60 cubic yards of structural concrete placed, or as required by the project specifications. Two (2) cylinders will be tested at 7 days and two (2) cylinders will be tested at 28 days or as requested by the Client.
 - Perform one (1) slump test per 60 cubic yards of structural concrete placed.
 - Report air content of concrete as specified by construction documents per sample.
 - Review mix design of concrete as requested by the Client.
 - Sample, mold, cure and test one (1) set of two (2) flowable backfill compressive strength cylinders for every 100 cubic yards placed, or as required by the specifications. The two (2) cylinders will be tested at 28 days.
- Concrete Aggregates:
 - Perform concrete aggregate verification testing as required or requested by the Client including sieve analysis, decantation, L.A. abrasion, magnesium sulfate soundness, sand equivalent, organic impurities, fineness modulus, deleterious materials, acid insoluble residues, etc.

5.0 Utility Adjustment Coordination

5.1 Utility Adjustment Coordination

- Participate in meetings as necessary to effectively manage the utility coordination process.
- Schedule periodic meetings with utility owner's representatives for coordination purposes.
- Attend meetings with CTRMA and other interested parties as directed.

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ATTACHMENT A – SCOPE OF SERVICES

- Meet with the Contractor and/or designer as necessary to resolve matters relating to schedules, utility identification, design changes, conflict resolution, and negotiation with utility owners.
- Assist CTRMA with negotiating the details of utility agreements with the utility companies. Details will include any necessary betterment percentages, indirect costs, plans, estimates and schedules for the utility companies' activities. The GEC will also prepare draft agreements for CTRMA's use including the necessary exhibits and information concerning the project (such as reports, plans and surveys).
- Monitor and report utility adjustment status.

5.2 Utility Engineering

- Review existing utility information for conflicts with the proposed Project and provide a utility conflict analysis.
- Provide a conceptual utility relocation plan.
- Review utility plans for compliance with the appropriate policies, compatibility with the Project features, betterment inclusion and constructability.
- Provide oversight review of location, materials, and backfilling of trenches associated with utility adjustments; not responsible for actual location of utilities.

Attachment B - Fee Estimate

CTRMA General Engineering Consultant
 Atkins - Man-hour Breakdown & Fee Estimate
 Maha Loop/Elroy Road (Phase 1)

ATKINS - Work Authorization #10 Maha Loop/Elroy Road (Phase 1)

TASK / WORK DESCRIPTION	(Estimated Average Labor Rates)	A	B	C	D	E	F	TOTAL
		\$80.00	\$70.00	\$60.00	\$45.00	\$35.00	\$25.00	HRS
2 Environmental Study/Document Services								
2.1 Environmental Assessment				200	20	240	80	540
2.2 Public Involvement Support				80	20	80	80	260
								0
								0
								0
								0
								0
								0

TOTAL DIRECT LABOR		0	0	280	40	320	160	800
<i>% Total by Classification</i>		<i>0.00%</i>	<i>0.00%</i>	<i>35.00%</i>	<i>5.00%</i>	<i>40.00%</i>	<i>20.00%</i>	
Labor Costs		\$0	\$0	\$16,800	\$1,800	\$11,200	\$4,000	\$33,800
Overhead Costs	1.6881	\$0	\$0	\$28,360	\$3,039	\$18,907	\$6,752	\$57,058
Profit	12.0%	\$0	\$0	\$5,419	\$581	\$3,613	\$1,290	\$10,903
Total Loaded Labor		\$0	\$0	\$50,579	\$5,419	\$33,720	\$12,043	\$101,761

Direct Expenses	
Plotting and Reproduction	\$7,500
Mail and Deliveries	\$240
Misc Expenses	\$250
Travel and Field Expenses	\$980
Total Direct Expenses	\$8,970

Total \$110,731

Attachment B - Fee Estimate

CTRMA General Engineering Consultant
 Atkins - Man-hour Breakdown & Fee Estimate
 Maha Loop/Elroy Road (Phase 1)

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TASK / WORK DESCRIPTION	(Estimated Average Labor Rates)	A	B	C	D	E	F	TOTAL
		\$80.00	\$70.00	\$60.00	\$45.00	\$35.00	\$25.00	HRS
3 Design Services								
3.1 Design Survey				20	150	300	900	1370
3.2 Roadway Design		20	250	650	1050	900	120	2990
3.3 Structures		16	192	552	733	331	16	1840
3.4 Hydrology and Hydraulics		80	120	220	650	520	30	1620
3.5 Traffic Control Plans		16		40	120	60	16	252
3.6 Signing and Pavement Markings		16		40	120	60	16	252
3.7 Geotechnical Explorations and Pavement Design				110	140	420	220	890
								0
								0
TOTAL DIRECT LABOR		148	562	1632	2963	2591	1318	9214
<i>% Total by Classification</i>		<i>1.61%</i>	<i>6.10%</i>	<i>17.71%</i>	<i>32.16%</i>	<i>28.12%</i>	<i>14.30%</i>	
Labor Costs		\$11,840	\$39,340	\$97,920	\$133,335	\$90,685	\$32,950	\$406,070
Overhead Costs	1.6881	\$19,987	\$66,410	\$165,299	\$225,083	\$153,085	\$55,623	\$685,487
Profit	12.0%	\$3,819	\$12,690	\$31,586	\$43,010	\$29,252	\$10,629	\$130,987
Total Loaded Labor		\$35,646	\$118,440	\$294,805	\$401,428	\$273,023	\$99,202	\$1,222,544
Direct Expenses								
Plotting and Reproduction		\$8,800						
Mail and Deliveries		\$980						
Misc Expenses		\$250						
Travel and Field Expenses		\$1,800						
Total Direct Expenses		\$11,830						
Total		\$1,234,374						

Attachment B - Fee Estimate

CTRMA General Engineering Consultant
 Atkins - Man-hour Breakdown & Fee Estimate
 Maha Loop/Elroy Road (Phase 1)

ATKINS - Work Authorization #10 Maha Loop/Elroy Road (Phase 1)

TASK / WORK DESCRIPTION	(Estimated Average Labor Rates)	A	B	C	D	E	F	TOTAL
		\$80.00	\$70.00	\$60.00	\$45.00	\$35.00	\$25.00	HRS
4 Construction Supervision, Inspection, and Testing								0
4.1 Construction Inspection and Engineering		40		440	2840	2840	780	6940
4.2 Project Controls		40		100	620	720	240	1720
4.3 Materials Testing			80	220	640	780	120	1840
								0
								0
								0
								0
								0
								0

TOTAL DIRECT LABOR		80	80	760	4100	4340	1140	10500
<i>% Total by Classification</i>		0.76%	0.76%	7.24%	39.05%	41.33%	10.86%	
Labor Costs		\$6,400	\$5,600	\$45,600	\$184,500	\$151,900	\$28,500	\$422,500
Overhead Costs	1.3541	\$8,666	\$7,583	\$61,747	\$249,831	\$205,688	\$38,592	\$572,107
Profit	12.0%	\$1,808	\$1,582	\$12,882	\$52,120	\$42,911	\$8,051	\$119,353
Total Loaded Labor		\$16,874	\$14,765	\$120,229	\$486,451	\$400,499	\$75,143	\$1,113,960

Direct Expenses	
Plotting and Reproduction	\$240
Mail and Deliveries	\$1,000
Misc Expenses	\$1,200
Travel and Field Expenses	\$24,000
Total Direct Expenses	\$26,440

Total \$1,140,400

