

ENGINEERING SERVICES AGREEMENT

THE STATE OF TEXAS §
 §
COUNTY OF HARRIS §

THIS AGREEMENT is between **Harris County**, a body corporate and politic under the laws of the State of Texas, hereinafter called "County", acting herein for the **Harris County Toll Road Authority** (HCTRA), a division of the County, and **KCI Technologies, Inc.**, hereinafter called the "Engineer" or "Company".

W I T N E S S E T H:

WHEREAS, the County proposes to hire the Engineer to provide engineering design services for the permanent transition of Toll Road Operations to an all-electronic roadway environment for the Hardy Toll Road Segment #8 – Hardy Toll Road South in Harris County, Texas, hereinafter called the "Project";

WHEREAS, the Engineer has represented to the County that it is qualified and prepared to perform all of the services described in the Scope of Services, Appendix A, attached hereto and incorporated herein by reference as if copied herein verbatim (Scope of Services), and has submitted a proposal to provide professional engineering services for the Project;

WHEREAS, the County is satisfied that the Engineer is capable of performing the necessary services required for the Project and desires to contract with the Engineer to perform the services described in the Scope of Services;

WHEREAS, the provisions of Chapter 262, Texas Local Government Code, Competitive Bidding Law do not apply to the proposed agreement because the contract is for professional engineering services;

WHEREAS, the County has determined and found that it would be in the best interest of the County to delegate to the Executive Director of HCTRA supervisory and management authority over the Engineer; and

WHEREAS, the Engineer will control the methods and means in performing the work set out in the Scope of Services;

NOW, THEREFORE, in consideration of the mutual covenants and conditions set forth below, the parties agree as follows:

1. General

- a. In performing professional engineering services under this Agreement, the Engineer will function solely and exclusively for the benefit of the County and not for the benefit of the contractors for the Project or any other party. All

services rendered by the Engineer under this Agreement shall be performed under the supervision of HCTRA. The Engineer shall render services in accordance with generally accepted professional standards and use the degree of care and skill reasonably necessary to ensure compliance with all applicable laws and regulations.

- b. The Engineer shall be responsible for the professional quality, technical accuracy and the coordination of all deliverable documents and services furnished by the Engineer under this Agreement. The Engineer shall, without additional compensation, correct or revise all errors and deficiencies in its documents.
- c. The Engineer will collaborate with the County's personnel to facilitate the implementation of a Project Database within the County's Electronic Document Management System known as "CAPTRAC". The Electronic Document Management System will provide electronic management that shall govern the distribution and file copies of all Project related correspondence, reports, plans, and technical data. The County and the Engineer will use "CAPTRAC" to facilitate the effective electronic exchange of Project information and documents with members of the design team and other interested stakeholders.
- d. The Engineer will collaborate with the County's personnel to facilitate the maintenance of the Project Database. Project files shall be entered into the database by the Engineer on a timely basis and made available by the County on "CAPTRAC" at all times for performance of daily Project activities. Other documents, including those used for legal review, audit requests/requirements, and open records request purposes, shall be entered by the County staff assisting the Engineer team. The Engineer shall also ensure that all Project files are appropriately entered into the database:
 1. At all critical milestones;
 2. At established periodic intervals; and
 3. Following completion of the work as a final Project record, including applicable record drawings.

2. Scope of Services

The services to be provided herein in regard to the Project are defined in Appendix A ("Scope of Services").

3. Compensation and Payment

- a. The Engineer shall be entitled to payments based on hourly rates and reimbursement as set forth in this section, and the Engineer agrees that such payment will constitute full compensation for the performance of services

under this Agreement. The County shall not be obligated to pay in excess of **\$3,112,183.00** and the Engineer shall not be obligated to perform further services hereunder once such sum has been earned, except to the extent that HCTRA has given prior written authorization to perform additional services and receive compensation therefore from funds in excess of such figure and within the maximum sum available under 3.c.

- (1) The Engineer shall be entitled to payments based upon hourly billing for defined services and any additional services not included in the Scope of Services under this Agreement, including changes in the contractual scope of work and revision of work satisfactorily performed, provided that such additional services will be performed only when approved in advance and authorized by the County, and will be reimbursed at the raw salary rates in effect at that time, times a multiplier as set forth below, to the extent that such direct salary costs and subcontracts are reasonable and necessary for the performance of such services. The reimbursable hourly raw salary rates cannot exceed those set forth in Appendix B. The Engineer shall also be entitled to expense reimbursement as set forth in Appendix B, provided that miscellaneous expenses, if any, may be reimbursed hereunder only when HCTRA determines that incurring such expenses is not required as part of the original Scope of Services and provides written approval of such expense in advance of it being incurred. Payment will be made on the basis of certified time and expense records and in accordance with those payment procedures set forth in subparagraph b., below. Billing rates will have a 3.0 multiplier on raw salary rates.
 - (2) Where subcontractors are employed by the Engineer to perform additional services not within the original Scope of Services, the Engineer will be reimbursed for subcontractors' salaries and hourly rates, including overtime rates, on the same basis as described for the Engineer's own personnel in subparagraph a. (1), of this Paragraph. Reimbursement to the Subcontractor for non-salary costs incurred by subcontractors will be on the same basis as if the costs were incurred by the Engineer. The Engineer will be paid a subcontract administrative fee equal to ten percent (10%) of all subcontractor invoiced amounts. Total contract amounts shall include subcontractor fees.
- b. It is understood and agreed that monthly payments will be made to the Engineer by the County based on the following procedures: On or about the fifteenth day of each month during the performance of services hereunder and on or about the fifteenth day of the month following completion of all services hereunder, the Engineer shall submit to the County two (2) copies of invoices showing the amounts due for services performed during the previous

month, set forth separately for work under this Agreement and for additional services (accompanied by supporting certified time and expense records of such charges in a form acceptable to the County Auditor). It is specifically understood that any requests for travel reimbursements shall comply with those procedures for travel reimbursement to County employees established by the Harris County Auditor. HCTRA shall review such invoices and approve them within ten (10) calendar days with such modifications as are consistent with this Agreement and forward same to the County Auditor. The County shall pay each such invoice as approved by the County Auditor within twenty (20) calendar days after the County Auditor's approval of same. Invoices are due and payable net 30 days from receipt.

- c. It is expressly understood and agreed that the County has available the total maximum sum of **\$3,205,548.00** as hereinafter certified available for the purpose of satisfying the County's obligations under the terms and provisions of this Agreement. The County shall not be liable under any circumstances or any interpretations hereof for any costs under the Agreement except for those certified available for this Agreement by the Harris County Auditor, as evidenced by the issuance of a purchase order by the Harris County Purchasing Agent for the certified amount. Once the funds are expended for the purpose of satisfying the County's obligations under the terms and provisions of this Agreement, the County shall have no further obligations nor shall the Engineer be required to perform further services hereunder.

4. Time of Performance

It is understood and agreed that the time for performance of the Engineer's services under this Agreement shall begin with receipt of the Notice to Proceed and end **1460** calendar days from that date, except to the extent continued performance after that date is authorized in writing by the Executive Director of HCTRA or his designee. The Engineer is responsible for notifying HCTRA thirty days prior to the end of the contract.

5. The County's Option to Terminate

- a. The County has the right to terminate this Agreement at its sole option at any time, with or without cause, by providing written notice of such intention to terminate and by stating in said notice the "Termination Date." Upon such termination, the County shall compensate the Engineer in accordance with Paragraph 3., above, for those services that were provided under this Agreement prior to its termination and that have not been previously invoiced to the County. The Engineer's final invoice for said services will be presented to and paid by the County in the same manner set forth in Paragraph 3. b., above.

- b. Termination of this Agreement and payment in settlement as described in subparagraph a. of this Paragraph shall extinguish all rights, duties, obligations, and liabilities of the County and the Engineer under this Agreement and this Agreement shall be of no further force and effect; provided, however, such termination shall not act to release the Engineer from liability for any previous default either under this Agreement or under any standard of conduct set by law. No termination of this Agreement shall have the effect of terminating the Engineer's obligations under Sections 7 (Delays and Damages), 8 (Inspection of the Engineer's Books and Records), 12 (Appearance as Witness), or 15 (Indemnification).
- c. If the County shall terminate this Agreement as provided in this Paragraph, no fees of any type, other than fees due and payable at the Termination Date, shall thereafter be paid to the Engineer.
- d. The County's rights and options to terminate this Agreement, as provided in any provision of this Agreement shall be in addition to, and not in lieu of, any and all rights, actions and privileges otherwise available under law or equity to the County by virtue of this Agreement or otherwise. Failure of the County to exercise any of its rights, actions, options or privileges to terminate this Agreement as provided in any provision of this Agreement shall not be deemed a waiver of any rights, actions or privileges otherwise available under the law or equity with respect to any continuing or subsequent breaches of this Agreement or of any other standard of conduct set by law.
- e. Copies of all completed and partially completed documents prepared under this Agreement shall be delivered to the County upon the Engineer's receipt of termination payment when and if this Agreement is terminated.

6. Source of Fee Payments

The County intends to pay for design and construction with the proceeds from the sale and issuance of bonds and a yearly revenue fund account. It is expressly acknowledged that all payments owing for Engineering services performed under this Agreement shall be made solely from these sources of funds for financing design and construction of the Project. The County shall be under no liability under this Agreement to make payment to the Engineer from any other source. In addition, the County reserves the right, at its sole discretion, at any time prior to issuance by the County of the written notice to proceed as provided in Paragraph 4., above, to cancel this Agreement and in the event of such cancellation, the Engineer shall not be entitled to any payment, nor have any claim for compensation or damages resulting from such cancellation. In no event shall the liability of the County under this Agreement exceed the amount hereunder certified as available by the County Auditor.

7. Delays and Damages

Except as otherwise provided herein, the Engineer agrees that no other charges or claims for damage shall be made by it against the County for any delays or hindrances occurring during the progress of the Engineer in providing to the County the services specified in this Agreement.

8. Inspection of the Engineer's Books and Records

The Engineer will permit the County, or any duly authorized agent of HCTRA, to inspect and examine the pertinent books and records of the Engineer, but only for the purpose of verifying the direct salary costs, overtime work, and out-of-pocket expenses for additional services charged to the Project described in and contemplated by Paragraph 3. a., above.

9. Personnel, Equipment, and Material

- a. The Engineer represents that it presently has, or is able to obtain, adequate qualified personnel in its employment for performance of the services required under this Agreement and that the Engineer shall furnish and maintain, at its own expense, adequate and sufficient personnel and equipment, in the opinion of HCTRA, to perform the services when and as required and without delays. It is understood that HCTRA will approve assignment and release of all key engineering personnel and that the Engineer shall submit written notification of all key engineering personnel changes monthly for HCTRA's approval prior to the implementation of such changes. Services described in this Agreement shall be performed under the direction of an engineer licensed to practice professional engineering in the State of Texas.
- b. All employees of the Engineer or a subcontractor of the Engineer shall have such knowledge and experience as will enable them to perform the duties assigned to them. Any employee of the Engineer or a subcontractor of the Engineer who, in the opinion of HCTRA, is incompetent or by his conduct becomes detrimental to the Project shall, upon request of HCTRA, immediately be removed from association with the Project.
- c. Except as otherwise specified, the Engineer shall furnish all equipment, transportation, supplies, and materials required for its operations under this Agreement.

10. Subletting

The Engineer shall not sublet, assign, or transfer all or any part of the services in this Agreement without the prior written approval of HCTRA. Responsibility to HCTRA for sublet work shall remain with the Engineer.

11. Conferences

At the request of HCTRA, the Engineer shall provide appropriate personnel for conferences at its offices, or attend conferences at the various offices of HCTRA, or at the site of the Project, and shall permit inspections of its offices by HCTRA, or others when requested by HCTRA.

12. Appearance as Witness

If requested by the County, or on its behalf, the Engineer shall prepare such engineering exhibits and plats as may be requested for all hearings and trials related to the Project and, further, it shall prepare for and appear at conferences and shall furnish competent expert engineering witnesses to provide such oral testimony and to introduce such demonstrative evidence as may be needed throughout all trials and hearings with reference to any litigation relating to the Project. Compensation for trial preparation and appearance by the Engineer in courts regarding litigation matters will be made in accordance with the provisions of Paragraph 3. a. (1), above.

13. Compliance with Laws

The Engineer shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of this Agreement, including, without limitation, Worker's Compensation laws, minimum and maximum salary and wage statutes and regulations, licensing laws and regulations. When required, the Engineer shall furnish the County with certification of compliance with said laws, statutes, ordinances, rules, regulations, orders, and decrees specified above.

The Engineer shall strictly comply with Section 2251.022 Texas Government Code, and shall require that its subcontractors fully comply with Section 2251.023 Texas Government Code.

14. Insurance

The Engineer shall obtain, keep and maintain any and all insurance that may be required by law or that may be required by any agreement the County has with any other party concerning the Project. The Engineer's insurance policies shall be the primary policies. Under no circumstances will the County be liable for any policy premiums or deductibles. The Minimum Insurance Requirements are attached hereto as Appendix C.

15. Indemnification

TO THE EXTENT ALLOWED BY LAW, THE ENGINEER AGREES TO INDEMNIFY AND HOLD HARMLESS THE COUNTY, ITS OFFICERS, EMPLOYEES, AND AGENTS FROM LIABILITY, LOSSES, EXPENSES, DEMANDS, REASONABLE ATTORNEYS' FEES, AND CLAIMS FOR BODILY INJURY (INCLUDING DEATH) AND PROPERTY DAMAGE TO THE EXTENT CAUSED BY THE NEGLIGENCE, INTENTIONAL TORT, INTELLECTUAL PROPERTY INFRINGEMENT OF THE ENGINEER (INCLUDING THE ENGINEER'S AGENTS, EMPLOYEES, VOLUNTEERS, AND SUBCONTRACTORS/CONSULTANTS UNDER CONTRACT, OR ANY OTHER ENTITY OVER WHICH THE ENGINEER EXERCISES CONTROL) IN THE PERFORMANCE OF THE SERVICES DEFINED IN THIS AGREEMENT. THE ENGINEER SHALL ALSO SAVE THE COUNTY HARMLESS FROM AND AGAINST ANY AND ALL EXPENSES, INCLUDING REASONABLE ATTORNEYS' FEES, IN PROPORTION TO THE ENGINEER'S LIABILITY, THAT MIGHT BE INCURRED BY THE COUNTY, IN LITIGATION OR OTHERWISE RESISTING SUCH CLAIMS OR LIABILITIES.

16. Delivery of Notices, Etc.

- a. All routine written notices, invoices, change orders, etc. are to be delivered to the Deputy Director, Tolling Operations at the Harris County Toll Road Authority, 7701 Wilshire Place Drive, Houston, Texas 77040, or at such other place or places as the County may designate by written notice delivered to the Engineer.

All formal notices and demands under this Agreement shall be delivered to the Harris County Toll Road Authority, 7701 Wilshire Place Drive, Houston, Texas 77040, Attention: Executive Director.

- b. All written notices, demands, and other papers or documents to be delivered to the Engineer under this Agreement shall be delivered to KCI Technologies, Inc., 801 Travis Street, Suite 2000, Houston, Texas 77002, Attn: Glenn Graham, PE, or at such other place or places as the Engineer may designate by written notice delivered to the County.

17. Reports of Accidents, Etc.

Within 24 hours after the occurrence of any accident or other event which results in, or might result in, injury to the person or property of any third person (other than an employee of the Engineer), whether or not it results from or involves any action or failure to act by the Engineer or any employee or agent of the Engineer and which arises in any manner from the performance of this Agreement, the Engineer shall send a written report of such accident or other event to the County, setting forth a full and concise statement of the facts pertaining thereto. The Engineer shall also immediately send the County a copy of any summons,

subpoena, notice, or other documents served upon the Engineer, its agents, employees, or representatives, or received by it or them, in connection with any matter before any court arising in any manner from the Engineer's performance of work under this Agreement.

18. The County's Acts

Anything to be done under this Agreement by the County may be done by such persons, corporations, or firms as the County may designate.

19. Limitations

Notwithstanding anything herein to the contrary, all covenants and obligations of the County under this Agreement shall be deemed to be valid covenants and obligations only to the extent authorized by the Act creating the County and permitted by the laws and the Constitution of the State of Texas.

20. Captions Not a Part Hereof

The captions or subtitles of the several sections and divisions of this Agreement constitute no part of the content hereof, but are only labels to assist in locating and reading the provisions hereof.

21. Controlling Law, Venue

This Agreement shall be governed and construed in accordance with the laws of the State of Texas. This Agreement shall be performed entirely in Harris County, Texas and the parties hereto acknowledge that venue is proper in Harris County, Texas, for all disputes arising hereunder and waive the right to sue or be sued elsewhere.

22. Successors and Assigns

The County and the Engineer bind themselves and their successors, executors, administrators and assigns to the other party of this Agreement and to the successors, executors, administrators and assigns of the other party, in respect to all covenants of this Agreement.

23. Independent Contractor

Notwithstanding any provision of this Agreement, the Engineer shall at all times act as an independent contractor, and not as an employee of the County, and the Engineer shall be responsible for the means and methods employed in performing services hereunder.

24. Certificate of Interested Parties (Form 1295)

Texas law requires all parties who enter into any contract with the County that must be approved by Commissioners Court to disclose all Interested Parties. Texas Ethics Commission Form 1295 must be completed in its entirety. If changes to this Form are necessary during this Agreement, the Engineer will notify and send the County an updated and complete version.

25. Additional Statutory Requirements

Company represents and certifies that, at the time of execution of this Agreement, Company (including any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of the same) is not listed by the Texas Comptroller of Public Accounts pursuant to Chapters 2252 or 2270 of the Texas Government Code, nor will Company engage in scrutinized business operations or other business practices that would cause it to be listed during the term of this Agreement.

26. Historically Underutilized Business Requirements

The State of Texas maintains a Historically Underutilized Business Program, which identifies any business at least 51 percent owned by an Asian Pacific American, African American, Hispanic American, Native American, woman and/or Service Disabled Veteran, who reside in Texas and actively participate in the control, operations and management of the entity's affairs as a Historically Underutilized Business.

In accordance with Section 284.007 of the Texas Transportation Code, the County shall make a good faith effort to meet or exceed goals provided under Section 284.007(b) for awarding contracts and subcontracts associated with a project it operates, maintains, or constructs to historically underutilized businesses. For purposes of this section, the term "historically underutilized business" has the meaning given to such term in subsection (d) of Section 284.007, Transportation Code.

The Engineer agrees to reasonably assist the County in its efforts to meet or exceed the goals provided under Section 284.007(b) for awarding contracts or subcontracts to historically underutilized businesses.

The Engineer will take affirmative steps to assure that minority firms and specifically women's business enterprises are used when possible and will not be discriminated against on the grounds of race, color, religious creed, sex, or national origin in consideration for an award.

Affirmative steps shall include:

1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises; and
4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises.

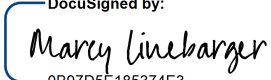
The Engineer shall submit evidence of compliance to Appendix X when requested by County.

[SIGNATURE PAGE FOLLOWS]

APPROVED AS TO FORM:

CHRISTIAN D. MENELEE
County Attorney

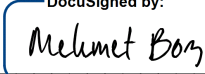
HARRIS COUNTY

By: 
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MARCY LINEBARGER
Assistant County Attorney

By: _____
LINA HIDALGO
County Judge

Date: _____

KCI TECHNOLOGIES, INC.

By: 
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Name: Mehmet Boz
Title: Vice President
Date: 9/20/2022

APPENDIX A SCOPE OF SERVICES

KCI Technologies

PROJECT: Schematic Development for Hardy Toll Road North - Segment 9

LIMITS: From BW 8 to IH 45 (North of SH 99)

GENERAL DESCRIPTION

Significant traffic congestion has developed in the area served by the Hardy Toll Road due to growth and development. This growth has led to a reduction in mobility on the facility and at the access points / ramps to the Hardy Toll Road. The purpose of this Project is to:

- A. Evaluate the present traffic conditions on the Hardy Toll Road, using the available growth projections for the area and make recommendations with regards to the benefits/value of adding new points of ingress/egress and/or providing revised configurations for existing points of ingress/egress.
- B. Improve mobility and safety of the roadway system and accessibility / connectivity along the project.
- C. Identify and analyze these problem areas and make recommendations to improve the existing road conditions that contribute to the traffic congestion in those areas.

HCTRA has designated Entech Civil Engineers, Inc. (ECE) as its Program Management Consultant (PMC). ECE shall be the prime point of contact for the Engineer. The work to be performed by the Engineer under this contract shall consist of providing preliminary engineering services for the above referenced project. In general engineering design and procedures will follow the usual practices of the Texas Department of Transportation (TxDOT), except as may be modified herein or directed by the Harris County Toll Road Authority (HCTRA), and will conform to HCTRA's policies and procedures.

The work to be performed by the Engineer shall include the development of:

- A. Diagrammatic for up to three (3) alternative improvements for the identified problem areas which includes short term and long-term improvements.
- B. Design schematic layout for the recommended improvements to include short-term and long-term improvements.

The Engineer shall complete the services to be provided in accordance with the milestone schedule established.

The Engineer shall direct and coordinate the various elements and activities associated with developing the design schematics

The Engineer shall prepare the project schedule indicating tasks, critical dates, milestones, deliverables and HCTRA review requirements. The schedule will depict the order of the various tasks, milestones, and deliverables.

The Engineer shall provide ongoing quality assurance and quality control to ensure completeness of product and compliance with HCTRA procedures.

The engineering work under this contract will consist of data collection and analysis, development of geometric alternatives, drainage options, traffic signalization, and surveying incorporating the results of the traffic studies, hydraulic studies and utility investigations (to be done by others) and as detailed below:

(Function Code 145 – Project Management)

I. PROJECT MANAGEMENT

The purpose of this task is to provide the overall management of the contract. The Engineer will set up Project folders and files, provide overall coordination with the Project Team Members (Team), HCTRA, and the PMC.

- A. The Engineer will provide general coordination with and between the Team and the PMC regarding administrative and technical issues.
- B. Quality Assurance/Quality Control Plan
 - 1. The Engineer shall submit their Quality Assurance / Quality Control (QA/QC) Plan to document the quality control program to be implemented by the Engineer following HCTRA protocol. The Engineer shall provide ongoing quality assurance and quality control to ensure completeness of product.
 - 2. The Engineer shall submit the QA/QC check print with each submittal.
- C. Prepare and submit monthly progress reports and invoices to HCTRA through the PMC for review and approval. The submittal will include progress report, invoice, and schedule using P6 and will be confirmed by the PMC based on in-progress deliverables received.
 - 1. The Engineer's written progress report shall describe activities performed during the reporting period by scope task; activities planned for the following period, problems encountered and actions taken to remedy them, a list of meetings attended, a list of deliverables submitted in the reporting period, a

list outstanding issues that need resolution, overall status including a physical percent complete, and a financial percent complete by scope task, and estimated completion dates for the work.

2. The Engineer will prepare each invoice in the format provided by the PMC. When directed by the PMC and/or HCTRA, the Engineer shall modify the information and/or format. For contracts with Time and Materials and/or contingency work, certified timesheets shall be submitted with the invoice.
- D. The Engineer will be responsible for internal documentation and administration of the Project files.
- E. The Engineer shall prepare an overall Project schedule detailing the progression of the work. This P6 schedule will include tasks, critical dates, milestones and review dates by HCTRA and the PMC, submittal dates for deliverables, and an estimated time frame to complete the work. Changes or adjustments in the schedule caused by delays in tasks or reviews will be discussed by the PMC with HCTRA.

II. MEETINGS AND CONFERENCES

The Engineer shall attend:

- Project “kick-off” meeting held by the PMC and HCTRA.
- 12 monthly coordination and progress review meetings. Prepare and distribute meeting minutes within five working days after the meeting.

(Function Code 110 – Route and Design Studies)

I. ROUTE AND DESIGN STUDIES

The Engineer shall prepare the proposed roadway schematic layout that includes projected traffic volumes, geometrics for mainlanes, frontage roads, ramps, overpasses, direct connectors and existing and proposed typical sections. The Engineer shall furnish Microsoft Office and use Open Roads Designer computer generated media containing the roadway schematic layout to the PMC. All supporting attachments and exhibits must accompany the schematic layout. All MicroStation and ORD computer generated files containing the roadway design schematic must be fully compatible with the software used by the PMC and HCTRA without further modification or conversion.

The Engineer shall review, and evaluate existing and twenty-year projected traffic data for use in the preparation of the schematic design layout. The data must be utilized in accordance with the requirements for schematic development and consistent with the policies of HCTRA.

The Engineer shall prepare preliminary drawings to identify any potential impacts and constraints within the project corridor, including impacts to the nature, cultural, and human environment. The potential impacts and constraints identified should include, but

not be limited to all existing and proposed utilities (provided by HCTRA- both public and private), structures, and undeveloped areas. Any potential utility conflicts and structural impediments must be identified as such. The Engineer shall propose alternative alignments that avoid or minimize displacements and damages and prepare any additional attachments or exhibits required to illustrate a preferred alternative alignment.

A. DATA COLLECTION:

The Engineer shall collect, review, and evaluate data for schematic development. The data may include but not limited to

- aerial photos and planimetric
- as-built plans
- ongoing and previous studies
- previous schematics
- right-of-way maps
- existing aerial planimetric mapping
- existing traffic counts (provided by HCTRA)
- accident data (provided by HCTRA)

- previous drainage studies
- Public and private utility information (provided by HCTRA)
- Local Major Thoroughfare Plan
- Regional Pedestrian and Bicycle Plan
- current unit bid price information
- standard drawings

The Engineer shall have discussions/meet with all government transportation planning agencies such as TxDOT, Harris County Transportation and Planning, City of Houston Transportation, HGAC, as well as, adjacent land development planners that may have current and future street projects in the area that may impact the conclusions of this study. The Engineer shall notify HCTRA in writing whenever the Engineer finds disagreement with the information or documents collected.

Using collected data and base maps from HCTRA, the Engineer shall develop an overall analysis of the existing conditions to develop the schematic alternatives and design.

B. FIELD RECONNAISSANCE:

The Engineer shall conduct field reconnaissance and collect existing field data including a photographic record of notable existing features to develop and complete the schematic design.

DESIGN SURVEY

Perform a Design Survey for Hardy Toll Road and the land adjacent to the road required for the final roadway design. This requires surveying the Hardy Toll Road from Beltway 8 to IH 45 North for an approximate total length of 13.3 miles. The existing right-of-way (ROW) along Hardy Toll Road will be verified for the limits of current existing ROW and mapped 100-feet beyond the existing ROW and any temporary easements required for the final roadway design, providing access is permitted. The design survey will be a combination of research, field work, analysis, computation, and documentation necessary to provide detailed topographic (3-dimensional) mapping of a project site. The design survey may include, but need not be limited to locating existing ROW, cross-sections or data to create cross-sections and Digital Terrain Models (DTM), horizontal and vertical location of utilities and improvements, detailing of bridges and other structures, review of ROW maps, establishing control points, etc. We will supplement with terrestrial scan/survey to obtain survey data in obscured areas.

TASKS TO BE COMPLETED

- a. Obtain or collect data to create cross-sections and digital terrain models.
- b. Locate existing utilities.
- c. Locate topographical features and existing improvements.
- d. Provide details of existing bridge structures.
- e. Provide details of existing drainage features, (e.g., culverts, manholes, etc.).
- f. Locate wetlands.
- g. Establish additional and verify existing control points to be used with aerial and mobile LiDAR. Horizontal and Vertical control ties must be made and tabulated, to other control points in the vicinity, which were established by other sources such as, the National Geodetic Survey (NGS), and the Federal Emergency Management Agency (FEMA), and any other local entities as directed by Harris County.
- h. Locate existing ROW.
- i. Review ROW maps.
- j. Locate boreholes.
- k. Perform hydrographic surveys.
- l. Update existing control data and prepare survey control data sheets
- m. Identify all Railroad ROW and crossings

TECHNICAL REQUIREMENTS

- 1) Design surveys will be performed under the supervision of a RPLS currently registered with the TBPELS.

- 2) Horizontal ground control used for design surveys furnished to the Engineer's Surveyor by the State or based on acceptable methods conducted by the Engineer's Surveyor, must meet the standards of accuracy required by the HCTRA and TxDOT.

Reference may be made to standards of accuracy for horizontal control traverses, as described in the TxDOT Survey Manual, latest edition, or the TSPS Manual of Practice for Land Surveying in the State of Texas, as may be applicable.

- 3) Vertical ground control used for design surveys and construction surveys, furnished to the Engineer's Surveyor by HCTRA or based on acceptable methods conducted by the Engineer's Surveyor, must meet the standards of accuracy required by HCTRA and TxDOT.

Reference may be made to standards of accuracy for vertical control traverses, as described in the TxDOT Survey Manual, latest edition, or the TSPS Manual of Practice for Land Surveying in the State of Texas, as may be applicable.

- 4) Side shots or short traverse procedures used to determine horizontal and vertical locations must meet the following criteria:

1. Side shots or short traverses must begin and end on horizontal and vertical ground control as described above.

2. Standards, procedures, and equipment (may be GPS Equipment, LiDAR, Total Stations, etc.) used must be such that horizontal locations relative to the control may be reported within the following limits:

- Bridges and other roadway structures: less than 0.1 of one foot.
- Utilities and improvements: less than 0.2 of one foot.
- Cross-sections and profiles: less than 1 foot.
- Bore holes: less than 3 feet.

3. Standards, procedures, and equipment (may be GPS Equipment, LiDAR, Total Stations, etc.) used must be such that vertical locations relative to the control may be reported within the following limits:

- Bridges and other roadway structures: less than 0.02 of one foot.
- Utilities and improvements: less than 0.1 of one foot.
- Cross-sections and profiles: less than 0.2 of one foot.
- Bore holes: less than 0.5 of one foot.

AUTOMATION REQUIREMENTS

- 1) Planimetric design files (DGN) must be fully compatible with the Bentley's MicroStation graphics program without further modification or conversion.

- 2) Electronically collected and processed field survey data files must be fully compatible with the HCTRA's computer systems without further modification or conversion. All files must incorporate only those feature codes currently being used by HCTRA.
- 3) DTM must be fully compatible with the Bentley's OpenRoads Designer (ORD) without further modification or conversion. All DTM must be fully edited and rectified to provide a complete digital terrain model with all necessary break lines.

DELIVERABLES

The deliverables for design surveys and construction surveys shall be any combination of the following:

- Digital Terrain Models (DTM) and the Triangular Irregular Network (TIN) files in a format acceptable by the State.
- Maps, plans, or sketches prepared by the Engineer's Surveyor showing the results of field surveys.
- Computer printouts or other tabulations summarizing the results of field surveys.
- Digital files or media acceptable by HCTRA containing field survey data (ASCII Data files).
- Maps, plats, plans, sketches, or other documents acquired from utility companies, private corporations, or other public agencies, the contents of which are relevant to the survey.
- Field survey notes, as electronic and hard copies.
- A digital and hard copy of all computer printouts of horizontal and vertical conventional traverses, GPS analysis and results, and survey control data sheets.
- All OpenRoads files.
- Survey reports in a format requested by HCTRA and the State.

C. EXISTING CONDITIONS ANALYSIS

Using collected data and base maps, the Engineer shall develop overall analyses of the existing conditions to develop the various schematic designs.

The analyses shall include, but not be limited to the following

1. Proposed ROW determination
2. Horizontal alignment
3. Vertical alignment
4. Pavement cross slopes and pavement type
5. Drainage crossings
6. Highway - Rail Grade Crossing including attending RR Coordination meetings
7. Intersection design and analysis (by others), including traffic signalization (by others). The Engineer will coordinate with the consultants performing traffic analysis.
8. Sight distance
9. Large Guide Signs and Roadside signing
10. Level-of-service (by others)
11. Locations of critical constraints
12. Conceptual Traffic control and construction phasing sequence (roll plot) – for construction feasibility purposes.

D. DESIGN CRITERIA:

The Engineer shall prepare all work in accordance with the latest version of HCTRA and/or TxDOT procedures, specifications, manuals, guidelines, standard drawings, standard specifications or previously approved special provisions and special specifications to include *HCTRA Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges*, the *Roadway Design Manual*, *Hydraulic Design Manual*, the *Texas Manual on Uniform Traffic Control Devices* (TMUTCD), and other approved manuals. When design criteria are not identified in the manuals, the Engineer shall notify HCTRA and refer to the *American Association of TxDOT Highway and Transportation Officials* (AASHTO), *A Policy on Geometric Design of Highways and Street, Latest Edition*. All tolling design work will comply with HCTRA's latest guidelines. HCTRA's Signing and Pavement Markings guidelines and any other associated manuals needed to complete the design. The design criteria shall include the following roadway design elements: design speed, lane and shoulder widths, pavement structure and slopes, horizontal curvatures, horizontal and vertical clearances, range of vertical profile grades, and side slopes. Throughout the project, the Engineer shall coordinate with HCTRA's staff for diagrammatic and schematic development.

E. PRELIMINARY DESIGN CONFERENCE:

The Engineer shall conduct an initial Kick-Off Meeting to establish and agree on fundamental aspects and concepts and to establish the basic features and design criteria for the project. The Engineer will prepare a Design Summary Report (DSR) that will document design criteria and address critical design elements and assumptions.

F. PRELIMINARY COST ESTIMATES:

The Engineer shall develop, review, and update preliminary cost estimates (three alternatives) for preferred alternative and recommended diagrammatic and design schematic using HCTRA unit costs.
A total of three cost estimates will be prepared.

G. ALTERNATIVE ANALYSIS:

During the schematic alternative analyses and upon request by HCTRA, the Engineer shall provide diagrammatic (planview only) for up to three (3) alternatives. The purpose of all alternatives shall be to improve safety, decrease congestion/improve traffic operations, improve access to the Hardy Toll Road for the adjacent communities, minimize potential 1) adverse impacts, 2) major utility conflicts, 3) structural impediments, or 4) exceptions to the design criteria. The alternatives will be evaluated based on the project criteria.

The Engineer shall prepare a technical memorandum to summarize the conceptual alternatives with description/geometric layout, preliminary cost estimate, traffic analyses, tolling impacts, stakeholder outreach efforts, potential environmental & economic impacts, major utility conflicts, screening of alternatives (benefits/disadvantages for the various alternatives) and selection of the preferred alternative.

The Engineer shall consider the incorporation of Bicycle and Pedestrian accommodations using TxDOT guidelines. This policy encourages the incorporation of safe and convenient walking and bicycling facilities into transportation projects. Public input when applicable, as well as local city and metropolitan planning organization for bicycle and pedestrian plans shall be considered.

H. TRAFFIC AND OPERATIONS ANALYSIS:

Existing and projected traffic data will be provided by HCTRA. The Engineer shall coordinate with the PMC, HCTRA, and other consultants providing traffic analysis services for operational and safety analysis of all alternatives. The results of these analyses shall be considered by the Engineer in identifying recommended improvements.

I. GEOMETRIC SCHEMATIC:

The design schematic horizontal layout will adhere to a design scale of 1 in. = 200 ft and the vertical scale will be 1 in. = 20 ft., unless otherwise directed. The schematic layout, exhibits, and attachments will be developed in English units. All Microsoft Office, Bentley OpenRoads and Microstation V8i - computer graphic files furnished to the PMC and HCTRA must be submitted in electronic format by means as specified. Schematics will follow the State and Federal Highway Administration (FHWA) standards, the schematics will also follow the CADD standards used by TxDOT and shall be submitted as an original document, accompanied with an original Microstation V8i and ORD formatted graphics file. Final copies of the schematic design shall be signed by a professional engineer licensed in the State of Texas.

The Engineer shall develop geometric design schematics based on the approved Alternative after the basic layout, lane arrangement, and ROW requirements are approved. The schematic will be plotted on 11"X17"/roll plots. Earthwork volumes will be calculated for use in developing cost estimates.

The geometric schematic plan view shall contain the following design elements:

1. Roadway alignments for mainlanes, general purpose lanes, ramps, direct connectors, bridges, frontage roads and cross streets at major intersections and grade separations.
2. Horizontal curve and superelevation data shown,
3. Pavement edges, curb lines, driveways for all roadway improvements
4. Pavement limits (widening-vs-full reconstruction)
5. Typical sections of existing and proposed roadways
6. Proposed structure locations, tolling facilities, bridge layouts including abutment, bent and rail locations
7. Proposed retaining walls and sound walls
8. Proposed cross-drainage structures with outfall flow arrows and significant drainage features or waterways identified (provided by others)
9. Existing and proposed major utilities – The Engineer will perform level C-D utility investigations.
10. Existing property lines and respective property ownership information, including driveway locations to frontage roads.
11. Existing and proposed ROW
12. Control-of-access limits – identify conflicts with existing driveways and streets
13. Existing and projected traffic volumes (provided by others)

14. Location and text of the existing and proposed guide signs
15. Lane lines, shoulder lines, and direction of traffic flow arrows indicating the number of lanes on all roadways
16. Latest aerial
17. Cross drainage structures (proposed sizes provided by others)

The geometric schematic profile shall contain the following design elements:

1. Calculated profile grade and vertical curve data including “K” values for the mainlanes, ramps and frontage roads
2. Existing ground line profiles along the mainlanes, ramps and frontage roads
3. Grade separations and overpasses
4. 100-year Water Surface Elevations (WSEL)
5. Calculated vertical clearances at grade separations and overpasses
6. Approximate locations of existing and proposed major utility crossings will be shown from QL-C and QL D. Should HCTRA provide QL A and/or QL B, we will incorporate the updated locations on the schematic.

J. Cross – Sections

The Engineer shall use Open Roads Designer (RD) to generate preliminary cross-sections every 100 feet and at culvert locations in conjunction with the Geometric Schematic. The Engineer shall determine earthwork volumes for use in the cost estimate, and shall prepare 11”x17” and or roll plots of the cross-sections.

K. CONSTRUCTION SEQUENCE

A detailed plan for this work is not necessary at this stage of this project; such work will be included in any selected design and future construction project. The Engineer shall consider the requirements for conceptual construction staging and traffic control throughout the development of schematic designs to ensure that the proposed design can be constructed. The Engineer will prepare a roll plot that generally describes the major conceptual construction phases while maintaining HCTRA’s desired number of lanes open to traffic while maintaining safety to motorist, pedestrians, and construction workers. A construction sequence narrative will be included as well to better explain TCP phasing.

L. PUBLIC INVOLVEMENT:

The Engineer shall prepare public involvement schematic exhibits necessary for stakeholder meetings. HCTRA will coordinate and schedule any necessary

public meetings. The Engineer shall make allowances to attend two (2) public meetings, as requested by HCTRA.

M. DELIVERABLES:

The Engineer shall assemble and provide the deliverables at the milestone submittals for progress reviews by the PMC and HCTRA. The milestone submittals will be at the completion of the alternatives analysis including diagrammatic layouts and at the 50%, 90%, and final schematic of the Recommended alternative. The Engineer shall provide the following deliverables:

1. Project photographic record of the existing project
2. Design Summary Report (DSR)
3. Conceptual Alternative Roll Plots (3)
4. Comment Resolution form addressing comments from each milestone submittal review
5. Existing Conditions Report
6. Engineering Summary Report (ESR). The ESR may include but not be limited to the following:
 - Executive Summary
 - Design Criteria/DSR
 - Evaluation of existing conditions
 - Traffic analysis
 - Alternative's analysis including diagrammatic of alternatives
 - Short Term Improvements
 - Long Term Improvements
 - Drainage Design of Trunkline
 - Utilities
 - ROW requirements
 - Cost Estimates
 - Recommended alternative schematic
7. Cross-sections in roll plots
8. Final Recommended Short- and Long-Term Schematic Layout and Estimate.
9. Electronic files utilized for the project shall be furnished to the PMC.

APPENDIX B

Maximum Raw Salary Rates KCI Technologies, Inc.

<u>JOB CLASSIFICATION</u>	Maximum Raw Salary Rate
Principal	\$126.00
Project Manager	\$114.00
Deputy Project Manager	\$105.00
Quality Manager	\$124.00
Senior Engineer	\$105.00
Project Engineer	\$75.00
Senior Traffic Engineer	\$95.00
Traffic Engineer	\$68.00
Senior Bridge Engineer	\$102.00
Bridge Engineer	\$75.00
Engineer-In-Training II	\$65.00
Engineer-In-Training I	\$48.00
Senior CADD Technician/Operator	\$54.00
CADD Technician/Operator	\$48.00
Senior Engineering Technician	\$65.00
Project Manager (TX RPLS)	\$61.00
Senior Surveyor-In-Training	\$51.00
Survey Technician	\$37.00
Survey Field Crew Coordinator	\$37.00
1-Person Survey Crew	\$30.00
Admin/Clerical	\$40.00
Note: Maximum Raw Salary Rates shown above are effective for the first year of the approved contract and are subject to an annual escalation rate of 4% effective on the contract anniversary date.	

Maximum Reimbursable Expense		
Mileage	Per mile	IRS Approved Rate
Plots (color on bond)	Each	At cost
Photocopies 8 ½ x 11" B/W	Each	At cost
Photocopies 11" x 17" B/W	Each	At cost
Photocopies 8 ½ x 11" Color	Each	At cost
Photocopies 11" x 17" Color	Each	At cost
22" x 34" Prints	Each	At cost
Delivery (Local)	Each	At cost
Reproduction	Each	At cost
Terrestrial Scanner	Per Hour	\$120.00

APPENDIX X

Disclosure of M/WBE Participation

Name of MBE/WBE Certified Firm	CivilCorp LLC
Certified by:	MBE/DBE/HUB (City of Houston/State of Texas/State of Texas)
Address / City / State / Zip:	2825 Wilcrest Dr. Suite 100 Houston, Texas 77042
Name of Contact Person:	Srinivas Chintalapati
Email address for Contact Person:	BGalvan@civilcorp.us
Telephone number for Contact Person:	713.785.9815
Percent of Subcontract:	9.4%
Description of services:	Professional Engineering
6-digit NAICS code for work to be performed:	541330

Name of MBE/WBE Certified Firm	Gradient Group
Certified by:	WBE/DBE/HUB (City of Houston, TxDOT, Texas)
Address / City / State / Zip:	2107 CityWest Blvd Suite 450 Houston, TX 77042
Name of Contact Person:	Stephanie Anderson
Email address for Contact Person:	sanderson@gradient-group.com
Telephone number for Contact Person:	832.779.5700
Percent of Subcontract:	19.6%
Description of services:	Professional Engineering
6-digit NAICS code for work to be performed:	541330

Disclosure of M/WBE Participation

Name of MBE/WBE Certified Firm	RODS Surveying Inc.
Certified by:	MBE/DBE/HUB (City of Houston/State of Texas/State of Texas)
Address / City / State / Zip:	6810 Lee Road, Suite 100, Spring Texas 77379
Name of Contact Person:	Robert Obregon
Email address for Contact Person:	robert@rods.cc
Telephone number for Contact Person:	281.257.4020
Percent of Subcontract:	6.5%
Description of services:	Surveying and Mapping
6-digit NAICS code for work to be performed:	54137

ORDER OF COMMISSIONERS COURT
Authorizing an Agreement with KCI Technologies, Inc.

The Commissioners Court of Harris County, Texas, met in regular session at its regular term at the Harris County Administration Building in the City of Houston, Texas, on _____, with all members present except _____.

A quorum was present. Among other business, the following was transacted:

**ORDER AUTHORIZING AN AGREEMENT WITH
KCI TECHNOLOGIES, INC. TO PROVIDE ENGINEERING DESIGN SERVICES FOR
THE PERMANENT TRANSITION OF TOLL ROAD OPERATIONS TO AN ALL-
ELECTRONIC ROADWAY ENVIRONMENT FOR THE HARDY TOLL ROAD
SEGMENT #8 – HARDY TOLL ROAD SOUTH**

Commissioner _____ introduced an order and moved that Commissioners Court adopt the order. Commissioner _____ seconded the motion for adoption of the order. The motion, carrying with it the adoption of the order, prevailed by the following vote:

	Yes	No	Abstain
Judge Lina Hidalgo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comm. Rodney Ellis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comm. Adrian Garcia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comm. Tom S. Ramsey, P.E.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comm. R. Jack Cagle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The County Judge thereupon announced that the motion had duly and lawfully carried and that the order had been duly and lawfully adopted. The order adopted follows:

IT IS ORDERED that:

1. The Harris County Judge is authorized to execute on behalf of Harris County an agreement in an amount not to exceed \$3,205,548.00 with KCI Technologies, Inc. to provide engineering design services for the permanent transition of Toll Road Operations to an all-electronic roadway environment for the Hardy Toll Road Segment #8 – Hardy Toll Road South. The Agreement is incorporated by reference and made a part of this order for all intents and purposes as though set out in full word for word.
2. All Harris County officials and employees are authorized to do any and all things necessary or convenient to accomplish the purposes of this order.