CITY OF PLANO
COUNCIL AGENDA ITEM

CITY SECRETARY'S USE ONLY	
☐ Consent ☐ Regular ☐ Statutory	
Council Meeting Date:	10/22/2012
Department:	Public Works
Department Head:	Gerald P. Cosgrove, P.E.
Agenda Coordinator (include phone #):	Kathleen Schonne X-7198 Project No. 5928.1

CAPTION

To approve a Professional Services Agreement by and between the City of Plano and TranSystems Corporation dba TranSystems Corporation Consultants, in the amount of $407,576 for the intersection improvement design for Preston Road at President George Bush Turnpike and authorizing the City Manager to execute all necessary documents.

FINANCIAL SUMMARY

☐ NOT APPLICABLE ☐ OPERATING EXPENSE ☐ REVENUE ☒ CIP

FISCAL YEAR: **2012-13**	**Prior Year (CIP Only)**	**Current Year**	**Future Years**	**TOTALS**
Budget	59,489	520,511	4,000,000	**4,580,000**
Encumbered/Expended Amount	-59,489	0	0	**-59,489**
This Item	0	-407,576	0	**-407,576**
BALANCE	0	**112,935**	**4,000,000**	**4,112,935**

FUND(S): STREET IMPROVEMENT CIP

COMMENTS: Funds are included in the FY 2012-13 Street Improvement CIP. This item, in the amount of $407,576, will leave a current year balance of $112,935 for the Preston/S.H. 190 Intersection Improvement project.

STRATEGIC PLAN GOAL: Design services for intersection improvements for Preston Road at President George Bush Turnpike relate to the City's Goal of Financially Strong City with Service Excellence.

SUMMARY OF ITEM

This agreement is for the engineering design services required for the intersection improvement design for Preston Road at President George Bush Turnpike. The City of Plano will pay for the design of this project. Texas Department of Transportation (TXDOT) will pay for the construction. Services performed under this Engineering Services Agreement shall be paid on a lump sum basis at the amounts shown on the breakdown below**:**

BASIC SERVICES	
A. Preliminary Design	$17,788
B. Final Design	$121,518
C. Bridges/Retaining Walls	$135,626
TOTAL BASIC SERVICES	**$274,932**
SPECIAL SERVICES	
A. Survey	$28,512
B. Subsurface Utility Engineering	$33,000
C. Environmental	$29,000
D. Landscape	$8,000

CITY OF PLANO
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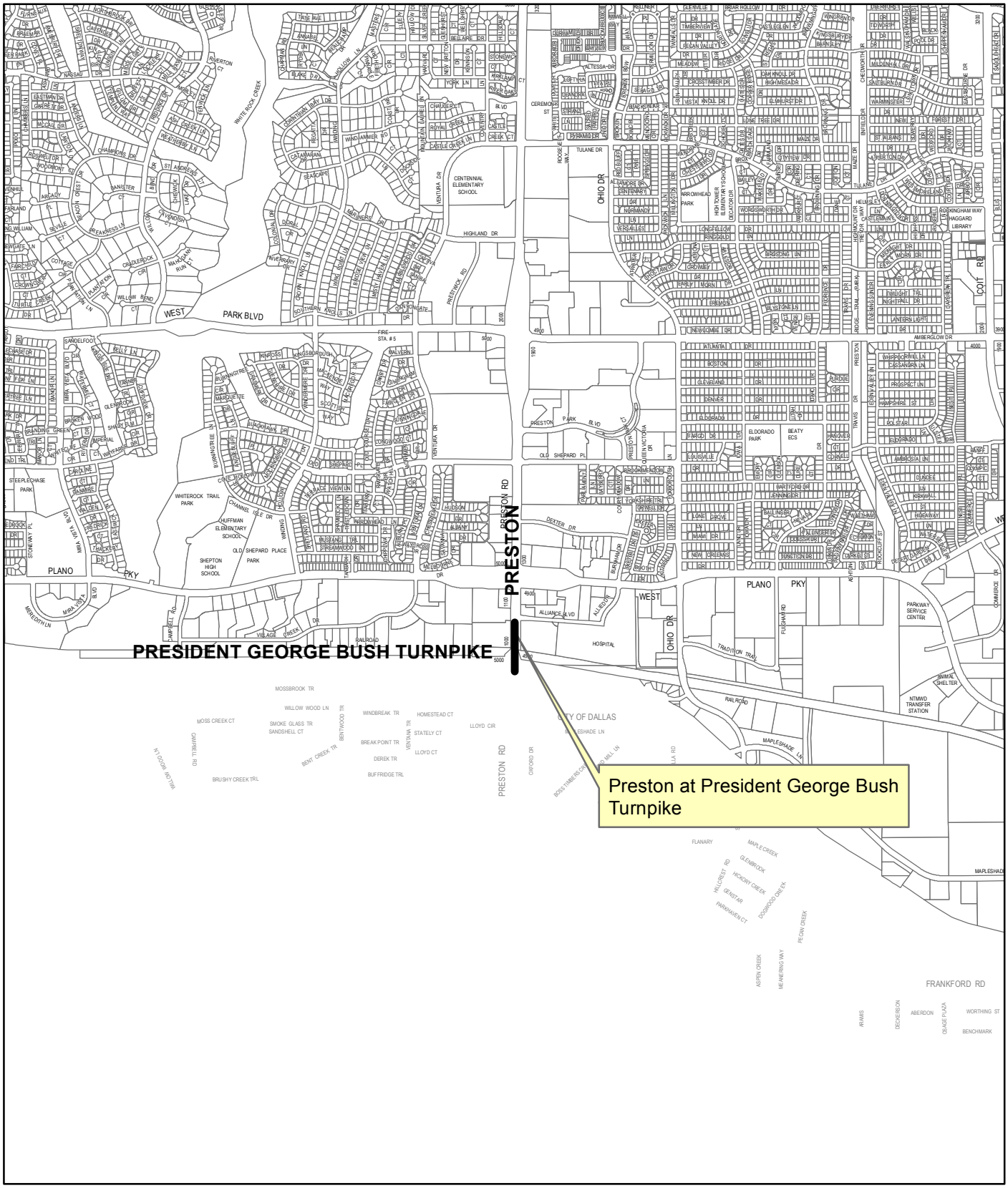
E.	Geotechnical	$14,000
F.	Public Involvement	$3,132
G.	Accessibility	$3,000
H.	Reimbursables	$14,000
	TOTAL SPECIAL SERVICES	**$132,644**
TOTAL FEE		**$407,576**

List of Supporting Documents:	Other Departments, Boards, Commissions or Agencies:
Location Map Engineering Services Agreement	N/A

Preston at President Bush Turnpike Intersection Improvement

PROJECT 5928.1



CITY OF PLANO
PUBLIC WORKS DEPT.

PRESTON ROAD AT PRESIDENT GEORGE BUSH TURNPIKE

PROJECT NO. 5928.1

ENGINEERING SERVICES AGREEMENT

THIS AGREEMENT is made and entered by and between the **CITY OF PLANO, TEXAS**, a Home-Rule Municipal Corporation, hereinafter referred to as "City", and **TRANSYSTEMS CORPORATION DBA TRANSYSTEM CORPORATION CONSULTANTS**, a **MISSOURI** Corporation licensed to do business in the State of Texas, hereinafter referred to as "Engineer", to be effective from and after the date as provided herein.

W I T N E S S E T H:

WHEREAS, the City desires to engage the services of the Engineer to prepare construction plans, specifications, details and special provisions and to perform other related engineering services in connection with the **PRESTON ROAD AT PRESIDENT GEORGE BUSH TURNPIKE** project located in the City of Plano, Collin County, Texas, hereinafter referred to as the "Project"; and

WHEREAS, the Engineer desires to render such engineering services for the City upon the terms and conditions provided herein.

NOW, THEREFORE, for and in consideration of the covenants contained herein, and for the mutual benefits to be obtained hereby, the parties hereto agree as follows:

I. Employment of the Engineer

The City hereby agrees to retain the Engineer to perform professional engineering services in connection with the Project. Engineer agrees to perform such services in accordance with the terms and conditions of this Agreement.

II. Scope of Services

The parties agree that Engineer shall perform such services as are set forth and described in Exhibit "A", which is attached hereto and thereby made a part of this Agreement. The parties understand and agree that deviations or modifications in the form of written contract modifications may be authorized from time to time by the City.

III. Schedule of Work

The Engineer agrees to commence work immediately upon execution of this Agreement, and to proceed diligently with said work, except for delays beyond the reasonable control of Engineer, to completion as described in the Completion Schedule, attached hereto as Exhibit "B" and thereby made a part of this Agreement.

IV. Not Applicable

V. Compensation and Method of Payment

The parties agree that Engineer shall be compensated for all services provided pursuant to this Agreement in the amount and manner described and set forth in the Payment Schedule attached hereto and incorporated herein as Exhibit "C". The contract amount specified in Exhibit "C" shall not be exceeded without the written permission of the City.

VI. Information to be Provided by the City

The City agrees to furnish, prior to commencement of work, all that information requested by Engineer and available in City's files.

VII. Insurance

Engineer agrees to meet all insurance requirements, and to require all consultants who perform work for Engineer to meet all insurance requirements, as set forth on Exhibit "D", which is attached hereto and thereby made a part of this Agreement.

Engineer agrees to notify the City of any changes in insurance policy coverage, including but not limited to changes in limits and cancellation. The Engineer shall notify the City in writing of any changes within forty-eight (48) hours of the change. The Engineer's notice shall include a description of the changes and how those changes vary from the insurance requirements of the contract/agreement.

VIII. INDEMNITY

THE ENGINEER AGREES TO DEFEND, INDEMNIFY AND HOLD THE CITY AND ITS RESPECTIVE OFFICERS, AGENTS AND EMPLOYEES, HARMLESS AGAINST ANY AND ALL CLAIMS, LAWSUITS, JUDGMENTS, FINES, PENALTIES, COSTS AND EXPENSES FOR PERSONAL INJURY (INCLUDING DEATH), PROPERTY DAMAGE OR OTHER HARM OR VIOLATIONS FOR WHICH RECOVERY OF DAMAGES, FINES, OR PENALTIES IS SOUGHT, SUFFERED BY ANY PERSON OR PERSONS, THAT MAY ARISE OUT OF OR BE OCCASIONED BY ENGINEER'S BREACH OF ANY OF THE TERMS OR PROVISIONS OF THIS CONTRACT, VIOLATIONS OF LAW, OR BY ANY NEGLIGENT, GROSSLY NEGLIGENT, INTENTIONAL, OR STRICTLY LIABLE ACT OR OMISSION OF THE ENGINEER, ITS OFFICERS, AGENTS, EMPLOYEES, INVITEES, SUBCONTRACTORS, OR SUB-SUBCONTRACTORS AND THEIR RESPECTIVE OFFICERS, AGENTS, OR REPRESENTATIVES, OR ANY OTHER PERSONS OR ENTITIES FOR WHICH THE ENGINEER IS LEGALLY RESPONSIBLE IN THE PERFORMANCE OF THIS CONTRACT. THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH SHALL NOT APPLY TO ANY LIABILITY RESULTING FROM THE SOLE NEGLIGENCE OF THE CITY, AND ITS OFFICERS, AGENTS, EMPLOYEES OR SEPARATE ENGINEERS. THE CITY DOES NOT WAIVE ANY GOVERNMENTAL IMMUNITY OR OTHER DEFENSES AVAILABLE TO IT UNDER TEXAS OR FEDERAL LAW. THE PROVISIONS OF THIS PARAGRAPH ARE SOLELY FOR THE BENEFIT OF THE PARTIES HERETO AND ARE NOT INTENDED TO CREATE OR GRANT ANY RIGHTS, CONTRACTUAL OR OTHERWISE, TO ANY OTHER PERSON OR ENTITY.

ENGINEER AT ITS OWN EXPENSE IS EXPRESSLY REQUIRED TO DEFEND CITY AGAINST ALL SUCH CLAIMS. CITY RESERVES THE RIGHT TO PROVIDE A PORTION OR ALL OF ITS OWN DEFENSE; HOWEVER, CITY IS UNDER NO OBLIGATION TO DO SO. ANY SUCH ACTION BY CITY IS NOT TO BE CONSTRUED AS A WAIVER OF ENGINEER'S OBLIGATION TO DEFEND CITY OR AS A WAIVER OF ENGINEER'S OBLIGATION TO INDEMNIFY CITY PURSUANT TO THIS AGREEMENT. ENGINEER SHALL RETAIN DEFENSE COUNSEL WITHIN SEVEN (7) BUSINESS DAYS OF CITY'S WRITTEN NOTICE THAT CITY IS INVOKING ITS RIGHT TO INDEMNIFICATION UNDER THIS AGREEMENT. IF ENGINEER FAILS TO RETAIN COUNSEL WITHIN THE REQUIRED TIME PERIOD, CITY SHALL HAVE THE RIGHT TO RETAIN DEFENSE COUNSEL ON ITS OWN BEHALF AND ENGINEER SHALL BE LIABLE FOR ALL COSTS INCURRED BY THE CITY.

IX. Independent Contractor

Engineer covenants and agrees that Engineer is an independent contractor and not an officer, agent, servant or employee of City; that Engineer shall have exclusive control of and exclusive right to control the details of the work performed hereunder and all persons performing same, and shall be responsible for the acts and omissions of its officers, agents, employees, contractors, subcontractors and consultants; that the doctrine of respondeat superior shall not apply as between City and Engineer, its officers, agents, employees, contractors, subcontractors and consultants, and nothing herein shall be construed as creating a partnership or joint enterprise between City and Engineer.

X. Assignment and Subletting

The Engineer agrees that neither this Agreement nor the work to be performed hereunder will be assigned or sublet without the prior written consent of the City. The Engineer further agrees that the assignment or subletting of any portion or feature of the work or materials required in the performance of this Agreement shall not relieve the Engineer from its full obligations to the City as provided by this Agreement.

XI. Audits and Records/Prohibited Interest

The Engineer agrees that at any time during normal business hours and as often as City may deem necessary, Engineer shall make available to representatives of the City for examination all of its records with respect to all matters covered by this Agreement, and will permit such representatives of the City to audit, examine, copy and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this Agreement, all for a period of one (1) year from the date of final settlement of this Agreement or for such other or longer period, if any, as may be required by applicable statute or other lawful requirement.

The Engineer agrees that it is aware of the prohibited interest requirements of the City Charter and Code of Conduct and will abide by the same. Further, a lawful representative of Engineer shall execute the affidavit shown in Exhibit "E". Engineer understands and agrees that the existence of a prohibited interest during the term of this contract will render the contract voidable.

XII. Contract Termination

The parties agree that City shall have the right to terminate this Agreement with or without cause upon thirty (30) days written notice to Engineer. In the event of such termination, Engineer shall deliver to City all finished or unfinished documents, data, studies, surveys, drawings, maps, models, reports, photographs or other items prepared by Engineer in connection with this Agreement. Engineer shall be entitled to

compensation for any and all work completed to the satisfaction of City in accordance with the provisions of this Agreement prior to termination.

XIII. Engineer's Opinion of Probable Construction Costs

The parties recognize and agree that any and all opinions of probable construction costs prepared by Engineer in connection with the Project represent the best judgment of Engineer as a design professional familiar with the construction industry, but that the Engineer does not guarantee that any bids solicited or received in connection with the Project will not vary from opinions prepared by Engineer.

XIV. Ownership of Documents

Original drawings and specifications are the property of the Engineer; however, the Project is the property of the City and Engineer may not use the drawings and specifications therefor for any purpose not relating to the Project without City's consent. City shall be furnished with such reproductions of drawings and specifications as City may reasonably require. Upon completion of the work or any earlier termination of this Agreement under Article XI, Engineer will revise drawings to reflect changes made during construction and he will promptly furnish the City with one (1) complete set of reproducible record prints. Prints shall be furnished, as an additional service, at any other time requested by City. All such reproductions shall be the property of the City who may use them without Engineer's permission for any proper purpose including, but not limited to, additions to or completion of the Project. However, use of the documents for other than their intended purpose shall be at the sole risk of the City.

XV. Complete Contract

This Agreement, including the Exhibits lettered "A" through "E", constitute the entire agreement by and between the parties regarding the subject matter hereof and supersedes all prior or contemporaneous written or oral understandings. This Agreement may only be amended, supplemented, modified or canceled by a duly executed written instrument.

XVI. Mailing of Notices

Unless instructed otherwise in writing, Engineer agrees that all notices or communications to City permitted or required under this Agreement shall be addressed to City at the following address:

City of Plano
Public Works Department, Suite 250
P.O. Box 860358
Plano, TX 75086-0358
Attn: Shahrzad Tavana, P.E.

City agrees that all notices or communications to Engineer permitted or required under this Agreement shall be addressed to Engineer at the following address:

TranSystems Corporation
dba TranSystems Corporation Consultants
3030 LBJ Freeway, Suite 900
Dallas, TX 75234
Attn: Garry Kraus, V.P.

All notices or communications required to be given in writing by one party or the other shall be considered as having been given to the addressee on the date such notice or communication is posted by the sending party.

XVII. Miscellaneous

A. Paragraph Headings:

The paragraph headings contained herein are for convenience only and are not intended to define or limit the scope of any provision in this Agreement.

B. Contract Interpretation:

Although this Agreement is drafted by the City, should any part be in dispute, the parties agree that the Agreement shall not be construed more favorably for either party.

C. Venue/Governing Law:

The parties agree that the laws of the State of Texas shall govern this Agreement, and that it is performable in Collin County, Texas. Exclusive venue shall lie in Collin County, Texas.

D. Successors and Assigns:

City and Engineer, and their partners, successors, subcontractors, executors, legal representatives, and administrators are hereby bound to the terms and conditions of this Agreement.

E. Severability:

In the event a term, condition, or provision of this Agreement is determined to be void, unenforceable, or unlawful by a court of competent jurisdiction, then that term, condition, or provision, shall be deleted and the remainder of the Agreement shall remain in full force and effect.

F. Effective Date:

This Agreement shall be effective from and after execution by both parties hereto.

G. Authority to Sign:

The undersigned officers and/or agents of the parties hereto are the properly authorized officials and have the necessary authority to execute this Agreement on behalf of the parties hereto.

SIGNED on the date indicated below.

TRANSYSTEMS CORPORATION DBA TRANSYSTEMS CORPORATION CONSULTANTS
A Missouri Corporation licensed to do business in the State of Texas

DATE: October 4, 2012

BY: _____
Garry Kraus
VICE-PRESIDENT

CITY OF PLANO, TEXAS

DATE: _____

BY: _____
Bruce D. Glasscock
CITY MANAGER

APPROVED AS TO FORM:

_____
Diane C. Wetherbee
CITY ATTORNEY

ACKNOWLEDGMENTS

STATE OF TEXAS §
§
COUNTY OF DALLAS §

This instrument was acknowledged before me on the 4 day of October, 2012, by **GARRY KRAUS, Vice-President,** of **TranSystems Corporation dba TranSystems Corporation Consultants**, a **Missouri** corporation licensed to do business in the State of Texas, on behalf of said corporation.

NOTARY PUBLIC
ELIZABETH P McCABE
Notary Public
State of Texas
My Comm. Exp. 12-27-2015

Elizabeth P. McCabe
Notary Public, State of Texas

STATE OF TEXAS §
§
COUNTY OF COLLIN §

This instrument was acknowledged before me on the _____ day of _____, 2012, by **BRUCE D. GLASSCOCK, City Manager,** of the **City of Plano**, **Texas,** a Home-Rule Municipal Corporation, on behalf of said municipal corporation.

_____
Notary Public, State of Texas

SH 289 at PGBT ROADWAY IMPROVEMENTS
EXHIBIT A
SCOPE OF SERVICES

PROJECT DESCRIPTION

The overall project at State Highway 289 (SH 289) and President George Bush Tollway (PGBT) consists primarily of turning lane improvements, including bridge expansions. A previous project involved preparing a preliminary schematic. This project involves completing the final schematic and the PS&E. Specific improvements to be included are:

- A free right turn lane from southbound SH 289 to westbound PGBT
- An additional left turn lane from southbound SH 289 to eastbound PGBT
- Expansion of the SH 289 bridge over PGBT including retaining wall modifications
- Expansion of the SH 289 bridge over the KCS railroad
- Modification to landscaping on the SH 289 bridge over PGBT
- Modifications to the SH 289/PGBT intersection traffic signals
- Modifications to the SH 289 medians and other related revisions along SH 289 from just south of Alliance Blvd to just north of Lloyds Circle.

The City of Plano (City) has commissioned the services of TranSystems Corporation Consultants (Engineer) to serve as the Engineer on this project. The Texas Department of Transportation (TxDOT) will require special coordination as the project will be let through the TxDOT letting system. The project must meet TxDOT procedural standards (drafting standards, environmental clearance, public hearings, and advertising procedures). The Engineer shall prepare preliminary engineering, specifications and estimates (PS&E) in accordance with the latest edition and revision of, but not limited, the TXDOT "Roadway Design Manual", and the "Texas Manual on Uniform Traffic Control Devices". The project must meet requirements set forth in the TxDOT Local Government Project Procedures (LGPP).
The consultant shall prepare shop drawings for all material intended for use on the traffic signals and related items for TXDOT approval.

BASIC DESIGN SERVICES

DESIGN STANDARDS/QUALITY ASSURANCE

A. DESIGN STANDARDS

This project will be designed in accordance with the following:

TxDOT Standard Construction Details and Specifications

City of Plano Standard Construction Details and Specifications

City of Plano Design Standards

NCTCOG Standard Specifications for Public Works Construction

Texas Commission Environmental Quality Requirements

Architectural Barriers Act

EPA Regulations

TXDOT "Roadway Design Manual"

Texas Manual on Uniform Traffic Control Devices

B. QUALITY ASSURANCE/QUALITY CONTRL (QA/QC)

Engineers shall complete QA/QC prior to each submittal to the city of Plano and TxDOT. Included shall be review by a senior engineer not intimately familiar with the plans and shall be field checked for constructability and information accuracy. All plans submitted to the City shall be signed and sealed in accordance with state law.

PRELIMINARY STUDIES AND DESIGN

A. **Design Criteria**. The Engineer shall design the project according to the approved design criteria. Plans and specifications will be prepared in the TXDOT format. The Engineer shall supply project specific design criteria (typical sections, estimate, design exceptions, etc.) to be inserted into the Design Elements form for discussion at the Design Concept Conference (DCC).

B. **Data Collection.** The Engineer shall collect, review and evaluate data described below. The Engineer shall notify the City in writing whenever the Engineer finds disagreement with the information or documents:
   1. Data, collected during the preliminary phase of this project, including "as-built plans", existing schematics, right-of-way maps, SUE mapping, existing cross sections, existing planimetric mapping, environmental documents, existing channel and drainage easement data, existing traffic counts, accident data, BRINSAP records, PMIS data, identified endangered species, identified hazardous material sites, current unit bid price information, current special provisions, special specifications, and standard drawings will be verified and updated as necessary.

C. **Design Concept Conference.** The Engineer, in cooperation with the City and TxDOT shall plan, attend and document a Design Concept Conference (DCC). The conference will provide for a brainstorming session in which decision makers, stakeholders and technical personnel may discuss and agree on:

   1. Roadway and drainage design parameters
   2. Project development schedule
   3. Other issues as identified by the City

D. **Design Schematic.** The Engineer will update the design schematic to current TxDOT design criteria and topographic features, including:

   - Plan view geometrics of all proposed turn lanes and turn lane adjustments
   - Typical sections for all turn lanes and turn lane adjustments
   - Lane alignment on each section where the exiting thru traffic lanes will be realigned

FINAL DESIGN

A. DESIGN SEQUENCE

1. **Preliminary Plans (30% and 60%).** Once the Schematic Design has been approved by the city of Plano and TxDOT, Engineer shall prepared 30% and 60% design packages. The following sheets are anticipated (Combining of certain sheets may be possible):
   - Title Sheet
   - Index of Sheets
   - Project Layout Control sheets
   - Quantity Summary sheets
   - General Notes
   - SWPPP Narrative and Erosion control sheets
   - Right-of-Way Maps.
   - Demolition plans
   - Typical sections
   - Traffic control plans, construction phasing and temporary traffic signals
   - Paving plan & Profile sheets
   - Grading plans on a suitable scale may be necessary where profiles and cross sections do not provide adequate detail
   - Storm sewer plan & Profile sheets
   - Pavement Marking and Signage plan sheets
   - Traffic signal plans
   - Illumination (Street Light) plans
   - Landscape plans
   - Irrigation plans
   - Cross Sections

   The Engineer shall meet with the City of Plano and TxDOT to discuss comments on 60% plans, specifications and cost estimates. Plans shall also be distributed to Utility Companies.
2. **Final Plans (90% & 100%).** The Engineer shall revise 60% plans based upon comments from City of Plano, TxDOT and Utility Companies. Specifications shall also be finalized.
3. **Primavera Schedule.** A primavera schedule shall accompany the 60%, 90% and 100% submittals.

B. ROADWAY DESIGN

1. **Roadway Design.** The Engineer shall provide roadway plan and profile drawings using CADD standards as required by TxDOT. 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 schematic drawing. Existing major subsurface and surface utilities shall be shown. Existing and proposed right-of-way lines shall be shown. Plan and Profile to be shown on ***separate*** or ***same*** sheets (this depends upon width of pavement) for main lanes.

a. The Plan view shall contain the following design elements:
   1) Calculated roadway centerlines for new turn lanes. Horizontal control points shall be shown. The alignments shall be calculated using GEOPAK.

2) Pavement edges for all improvements (main lanes, cross streets, and driveways).
3) Lane and pavement width dimensions.
4) The geometrics of auxiliary lanes.
5) Proposed structure locations, lengths and widths.
6) Direction of traffic flow on all roadways. Lane lines and/or arrows indicating the number of lanes shall also be shown.
7) Drawing scale shall be 1"=50' Horizontal and 1" = 5' vertical
8) Control of access line, & ROW lines and easements.
9) Begin/end super elevation transitions and cross slope changes.
10) Limits of riprap block sod, and seeding.
11) Existing utilities and structures.
12) Benchmark information.
13) Radii call outs, curb location, safety items and American with Disabilities Act Accessibility Guidelines (ADAAG) compliance items.

b. The Profile view shall contain the following design elements:
1) Calculated profile grade for proposed turn lanes. Vertical curve data, including "K" values shall be shown.
2) Existing and proposed profiles along the proposed centerline of the main lanes.
3) Drawing vertical scale shall be distorted 10' vertical to 1' horizontal.

2. **Typical Sections.** Typical sections shall be required for all proposed and existing 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, common proposed/existing structures including retaining walls, riprap, limits of embankment and excavation, etc.

3. **Cut and Fill Quantities.** The Engineer shall develop an earthwork analysis to determine cut and fill quantities and provide final design cross sections at 100 feet intervals. Cross sections shall be delivered in standard GEOPAK format on 11"x17" sheets and electronic files. The Engineer shall provide all criteria and input files used to generate the design cross sections. Cross sections and quantities shall consider existing pavement removals.

4. **Pavement Design**. The Engineer shall match the existing roadway section. No pavement design will be included.

C. DRAINAGE DESIGN

This contract does not include the detailed design of outfall improvements outside of the right of way, and for ditch outfall transitions of cross drainage culvert structures to the existing ditch.

Preliminary hydraulic design of all drainage structures (culverts, storm sewers, channels, etc.) shall be submitted to the **City and State** for review. This preliminary submission shall include the overall drainage plan, structure layout, and hydraulic computations. All hydraulic design shall be in accordance with the TxDOT Hydraulic Manual or agreed upon requirements, except where variances are permitted in writing by the **City and/or State**.

1. **Hydrologic Studies, Discharges.**
   a. Drainage area maps showing existing conditions and proposed improvements
   b. Determine 10 and check 100 yr design floods
   c. Show Natural Ground Profile
   d. Show Proposed Roadway Profile(s)
   e. Identify Existing drainage outfalls
   f. Identify all existing waters (i.e. creeks, ditches)
   g. Hydrologic data/discharge determination
   h. Determine detention requirements and impacts to adjacent areas

2. **Culvert and Storm Drain Design.**
   a. Hydraulic computations
      1) Culverts
      2) Storm Sewers
      3) Outfalls
   b. Culverts (Plan and Profile)
      1) New culverts
      2) Culvert replacements
   c. Storm sewers (Plan and Profile)
      1) New storm sewers
      2) Inlets
      3) Manholes
      4) Trunk lines
   d. Outfall channel(s)
   e. Summary of Quantities
   f. Determine areas requiring trench protection, etc
   g. Show all utility conflicts and minimize impacts and/or relocations where possible

3. **Storm Water Pollution Prevention Plans (SW3P).** The Engineer shall develop SW3P, on separate sheets from (but in conformance with) the TCP, to minimize potential impact to receiving waterways. The SW3P shall include text describing the plan, quantities, type, phase and locations of erosion control devices and any required permanent erosion control measures.

The Engineer shall use standard details where practical. No design and detailing of hydraulic structures have been included with this scope of work.

D. SIGNING, MARKINGS AND SIGNALIZATION

a. **Signing.** The Engineer shall prepare drawings, specifications and details for all signs and coordinate with the City for overall temporary, interim and final signing strategies and placement of signs. Sign detail sheets shall be prepared for small signs showing dimensions, lettering, shields, borders, corner radii, etc., and shall provide a summary of small signs. The Engineer shall also designate the shields to be attached to guide signs. The proposed signs shall be illustrated and numbered on plan sheets. Sign foundation shall be selected from TxDOT Standards and conform to MUTCD requirements

The Engineer shall provide the following information on signing layouts:
a. Roadway layout.
b. Center line with station numbering.

c. ROW lines.
d. Culverts and other structures that present a hazard to traffic.
e. Location of utilities.
f. Existing signs to remain, to be removed, or to be relocated.
g. Proposed signs (illustrated and numbered).

b. **Pavement Markings**. The Engineer shall detail permanent and temporary pavement markings and channelization devices on plan sheets. The Engineer shall coordinate with the City for overall temporary, interim, and final pavement marking strategies. Pavement markings shall be selected from the latest TxDOT standards.

The Engineer shall provide the following information on pavement marking layouts:
a. Proposed markings (illustrated and quantified) which include pavement markings, object markings and delineation.
b. Quantities of existing pavement markings to be removed.
c. Proposed delineators and object markers.
d. The location of interchanges, mainlanes, grade separations, frontage roads and ramps.
e. The number of lanes in each section of proposed highway and the location of changes in numbers of lanes.
f. ROW limits.
g. Direction of traffic flow on all roadways.

c. **Traffic Signalization.**
a. Existing plan information obtained from TxDOT and the City, during the preliminary phase will be verified, including:
1) Roadway plans for SH 289 and PGBT
2) Existing traffic signal and interconnect plans
3) Plat maps for adjacent properties
In addition to existing plan information, other available information such as the type of existing controllers will also be obtained.
b. Contact Power Company to identify potential service feed locations. Once preliminary plans are completed, the plans will be sent to the utility company to continue coordination of power service.
c. The location of the existing lighting will be discussed with the City to determine if additional lights are needed at the intersection, or if some of the lights should be shifted to the traffic signal mast arms. Power service for the lighting will be coordinated with the traffic signals, as necessary, either feeding lights on the mast arm poles from the existing lighting circuits or via a new circuit through the signal controller. Lighting and interconnect (if required) details and quantities will be incorporated into the signal plan sheets and details as necessary.
d. Preliminary plans will be submitted to the City, TxDOT and the utility companies for review. Once review comments are received, a meeting will be held with the City and TxDOT to review the comments, as necessary.
e. Final plans and construction cost estimates will be prepared, incorporating the review comments.

E. TRAFFIC CONTROL

Traffic Control Plan, Detours and Sequence of Construction. The Engineer shall prepare Traffic Control Plans (TCP) for the project. A detailed TCP shall be developed in accordance

with the latest edition of the *Texas Manual on Uniform Traffic Control Devices for Streets and Highways* (Texas MUTCD). The Engineer is to implement the current Barricade and Construction (BC) standards as applicable. The Engineer shall interface and coordinate phases of work, including the TCP, with adjacent Engineers.

1) The Engineer shall provide a written narrative of the construction sequencing and work activities per phase and determine the existing and proposed traffic control devices (regulatory signs, warning signs, guide signs, route markers, construction pavement markings, barricades, flag personnel, temporary traffic signals, etc.) to be used to handle traffic during each construction sequence. The Engineer shall show proposed traffic control devices at grade intersections during each construction phase (stop signs, signals, etc.). The Engineer shall show temporary roadways and detours required to maintain lane continuity throughout the construction phasing.

2) Where detours are required, the Engineer shall develop typical cross sections, calculate quantities, and show horizontal and vertical alignment information. The Engineer shall provide a detailed layout and arrangement of construction signs, construction pavement marking, traffic control devices (including temporary signals and signal heads).

3) Continuous, safe access to all properties during all phases of construction is mandatory. Approval from the City is required for any elimination of existing access capacity.

4) The Engineer shall design temporary drainage to replace existing drainage disturbed by construction activities or to drain detour pavement. The Engineer shall show horizontal and vertical location of culverts and required cross sectional area of culverts.

5) The Engineer shall identify and delineate any outstanding ROW parcels.

F. UTILITY RELOCATIONS

The Engineer shall coordinate with the City regarding utilities. The Engineer shall prepare drawings showing existing utilities, including those in conflict with construction on this project. The Engineer shall prepare plans to avoid utility adjustments, if feasible. The Engineer shall continue to maintain and update the utility plans as necessary.

G. ILLUMINATION

1. Preliminary Roadway Illumination Layout and Sign Lighting Electrical Circuit Layout
   a. Sign lighting circuits can be placed on Signing and Marking Sheets. Do not place roadway illumination on signing sheets.

2. Final Roadway Illumination and Sign Lighting Electrical Circuit Layouts
   a. Roadway layout showing pavement edges and shoulders, curbs, retaining walls, etc.
   b. Center line with station numbering
   c. ROW lines
   d. Symbol legend. Use department standard symbols for lighting and electrical
   e. Culverts and the other structures that present a hazard to traffic
   f. Location of underground utilities, if not shown on plan profile
   g. Location of overhead electrical lines, both crossing and parallel to ROW

h. Existing sign lighting circuits and roadway illumination to remain, to be removed, to be relocated
i. Existing service poles, electrical circuits, ground boxes, etc.
j. Contact electric utility for service pole locations, voltage characteristics
k. Location of proposed sign lighting circuits and roadway illumination.
l. Proposed electrical circuits.
m. Tabulation of all quantizes including proposed, existing to be relocated, existing to be removed. The layout sheet quantizes and lighting summary shall be shown. Tabulations to include estimated quantity with a column for final quantities

H. CONSTRUCTION DOCUMENTS/ESTIMATES

1. **Specifications.** The Engineer shall develop the list of standard specifications with the appropriate reference items to the estimate at the 65%, 95%, and 100% plan submittals. The Engineer shall also identify the need for any special specifications and/or special provisions. The Engineer shall prepare General Notes (from TxDOT's *Master List of General Notes)*, Special Specifications and Special Provisions for inclusion in the plans and bidding documents. The Engineer shall provide General Notes, Special Specifications and Special Provisions in rich text format. Two sets of drawings and specifications shall be submitted by the Engineer at the 65% and final submittals, respectively.

2. **Construction Schedule.** The Engineer shall prepare a construction contract time schedule using the latest version of Primavera or SureTrak software in accordance with TxDOT's *Administrative Circular No. 17-93*. The schedule shall indicate tasks, subtasks, critical dates, milestones, deliverables and review requirements in a format which depicts the interdependence of the various items, and adjacent construction packages. The Engineer shall provide assistance to the City in interpreting the schedule.

3. **Estimate.** The Engineer shall independently develop and report quantities in standard TxDOT bid format at the 60%, 90% and 100% PS&E submittals.

BRIDGE DESIGN

A. Revise Bridge Layouts, Prepare Structural Design and Structural Details for the below referenced bridges:
   1. Widening of the SH 289 over the PGBT
   2. Widening of the SH 289 over the KCS RR
B. Revise Bridge Layouts (each bridge)
   1. Bridge Layouts (PLAN)
      (a) Update bridge layouts and typical sections per TxDOT comments and any changes to horizontal alignments.
   2. Bridge Layouts (ELEVATION)
      (b) Update bridge layouts per TxDOT comments and any changes to vertical alignments.
C. Bridge Estimate, Quantities, and Specifications (each bridge)
D. Bridge Total Quantities and Cost Estimates (each bridge)
E. Bridge Special Provisions and Specifications (each bridge)
F. Bearing seat elevations for each beam or girder. Top of cap elevations for non-beam type structures.

G. General Guidelines for Bridge Design
   1. The bridge layout shall be in conformance with the Bridges and Structures, Operation and Planning Manual and the Bridges and Structures, Detailing Manual. **No bridge design work will be performed until TxDOT has given approval of the bridge layout.**
   2. **Engineer** shall make final design calculations and final detail drawings in accordance with standard requirements of the Texas Department of Transportation. All bridge design shall be in conformance with the Texas Department of Transportation Bridges and Structures Operation and Planning Manual, the current American Association of State Highway and Transportation Officials or American Railway Engineers Association Specifications for railway structures, Standard Specifications for Highway Bridges, including applicable interim specifications, and the Bridges and Structures, Foundation Exploration and Design Manual
   3. Elements of the bridge (abutments, bents, slabs, etc.) shall be detailed to a 1/2 inch equals one foot scale or 1/4 inch equals one foot scale to provide clear legible drawings when the drawings are reduced.
   4. Modifications to the standards except rail standards, if necessary, shall be clearly identified and designated by "MOD" in the standard title. Specific special drawings prepared by **Engineer** shall not be identified as standards. Modifications to rail standards are not included and shall be modified by TxDOT.
   5. Bridge layout sheets shall have the same vertical and horizontal scale. Usually a scale of 1 inch = 10 feet or 1 inch = 20 feet is used. Sections of existing and proposed structures usually have a scale of 1 inch = 5 feet. Soil core holes shall be positioned and labeled on the bridge layout plan view. The core hole data shall be plotted at the correct station, at the same vertical scale, and at the proper elevation unless otherwise approved by the Design Division.
   6. Soil core hole data shall be shown on layouts as illustrated in the Bridges and Structures Foundation Exploration and Design Manual.

RETAINING WALLS

Retaining Walls – Existing retaining walls requiring modification are located along both sides of the PGBT.

A. Structural Design Details
   1. Walls to be modified are standard MSE wall. No changes to the structural elements will be require, only modification of the existing wall. The engineer shall ensure modifications to the wall will not materially alter the structural stability of the wall. No analysis of existing retaining walls will be performed.

B. Retaining Wall Layout (PLAN) shall include:
   1. Designation of reference line
   2. Beginning and ending retaining wall stations
   3. Station of each retaining wall joint
   4. Offset from reference line
   5. Horizontal curve data
   6. Number of retaining wall panels and lengths
   7. Total length of wall
   8. Indicate face of wall
   9. All wall dimensions and alignment relations (alignment data as necessary)
   10. Soil core hole locations based on information provided by the State

C. Retaining Wall Layout (ELEVATION) shall include:
   1. Top of wall elevations at each joint or intervals

2. Existing and finished ground line elevations
3. Height of stem/panel at each joint
4. Wall panel designations
5. Top of footing elevations/leveling pads
6. Limits of measurement for payment
7. Type, limits and anchorage details of railing (If applicable)
8. Top and bottom of wall profiles and soil core hole data plotted at correct station and elevation. The plot shall be at the same scale as the wall profile. Ground water elevations and the observation date shall be shown based on the geotechnical information provided from the State.

D. Complete a Rotational (Global) Stability Analysis.
E. An Engineer's cost estimate shall be prepared.
F. Summary of Quantities shall be prepared.
G. Typical X-section(s), coring details and bridge abutment to wall details shall be included

RAILROAD DESIGN COORDINATION

A. Preliminary Design

This phase will result in construction documents to be consistent with 60% plans for the bridge related items.

1. Data Collection
   a. Attend pre-design meeting with City (discuss project schedule, design criteria, pavement systems, review time)
   b. Refine design criteria for the project
   c. Provide input into detailed design schedule
2. Provide input for the Bridge related Preliminary Plans
   a. Typical sections
   b. Plan and Profile sheets
   c. Type, size and location for overhead structure crossing Kansas City Southern Railway (KCS)
3. Provide electronic files for inclusion into plan submittal to City
4. Coordinate and obtain KCS approval of bridge structure improvements.
5. Develop and submit preliminary opinion of probable construction costs itemized by unit of work, including contingency for bridge related items
6. Meet with City as necessary in connection with such preliminary work.
7. Field Check with representatives of KCS and the City at the project site with appropriate detailed plans. (One field check)
8. Permitting:
   i. KCS Type, Size and Location Permit – Prepare permit application documentation. Permit and review fees to be paid by City

B. Final Design

This phase will result in construction documents consistent with90% plans.

1. Attend two coordination meetings
2. Assist with the preparation of a detailed opinion of probable cost as it relates to rail operations.
3. Meet with City as necessary in connection with such final plan preparation.

4. Provide four sets of half size plans to KCS for review and comment. KCS submission will include construction phasing, drainage report, geotechnical report, and project specifications including special provisions with railroad requirements.
5. Submit four sets of half size final plans to KCS with all railroad comments addressed.
6. Review Final Plans and specifications with City
7. Coordinate with KCS including coordination for the construction of the widening of the bridge over the KCS.
8. Document response to all comments, recommend/resolve comment discrepancies associated with bridge related items
9. Incorporate comments into bid documents where appropriate

NTTA DESIGN COORDINATION

A. Preliminary Design

This phase will result in construction documents to be consistent with 60% plans for the bridge and retaining wall related items.

1. Data Collection
   a. Attend pre-design meeting at NTTA with City (discuss project schedule, design criteria, pavement systems, review time)
   b. Define NTTA design criteria required for the project
   c. Provide NTTA input into detailed design schedule

2. Provide any electronic files from NTTA for inclusion into plan submittal to City
3. Coordinate and obtain NTTA approval of bridge structure and retaining wall improvements
4. Develop and submit preliminary opinion of probable construction costs itemized by unit of work, including contingency for bridge and retaining wall related items
5. Field Check with representatives of NTTA and the City at the project site with appropriately detailed plans. (One field check)

B. Final Design

This phase will result in construction documents consistent with90% plans for bridge and retaining wall items.

1. Attend a coordination meeting
2. Assist with the preparation of a detailed opinion of probable cost as it relates to NTTA operations
3. Provide four sets of half size plans to NTTA for review and comment. NTTA submission will include construction phasing, drainage report, geotechnical report, and project specifications
4. Submit four sets of half size final plans to NTTA with all comments addressed
5. Review Final Plans and specifications with City
6. Coordinate with NTTA including coordination for the construction of the widening of the bridge over the PGBT

7. Document response to all comments, recommend/resolve comment discrepancies associated with bridge and retaining wall related items
8. Incorporate comments into bid documents where appropriate

SURVEYS

RIGHT-OF-WAY (ROW)

A. Right-of-Way Map.

1. Deed research
   a. Using the owner information gathered for right of entry, obtain copies of the vesting deeds, plats and other records for the affected parcels and the adjoining properties.
   b. Prepare a working sketch from the deed research of the affected and adjoining parcels
2. Field boundary investigation.
   a. Search and tie both front and rears corners of the affected parcels.
   b. Make an on the ground survey of any improvements severed by the proposed right-of-way line
   c. A registered surveyor will be in the field to direct the boundary investigation
3. Boundary resolutions
   a. Overall parcel boundaries will be reconstructed in accordance with the Texas Board of Professional Land Surveying standards
4. An overall base map of the project will be developed
5. Prepare right-of-way maps, parcel descriptions and parcel plats in accordance with TxDOT Dallas District standards. Estimated 2 Parcels
6. Deliverables in accordance with the Dallas District standards
   a. One full size right-of- way map on paper, Scale 1" = 50' (22" x 34")
   b. Three half size right-of-way maps on paper, Scale 1" = 100' (11" x 17")
   c. One set of folders for each Parcel, Parts 1 & 2, etc.., would be considered one folder. With one (copy signed and sealed) legal, sketch, closure sheet, parent tract deed (& Bi-Section if applicable) secured inside on the right side. Note: Just pencil on tab of folder what Parcel no. and FTW District will make the label
   d. Three copies (signed & sealed) of each legal and sketch loose inside of folder
   e. Two separate sets (copies) of legal and sketch on each parcel
   f. One separate set of Originals signed and sealed by RPLS legal & sketch
   g. CD with DGN Master File, Map Sheets, Excel Point List and Raw Data File and/or Field Notes
   h. Control points with coordinates on Excel Point List

7. Right-of-way staking
   a. Stake the proposed right-of-way with a 5/8 inch iron rod and aluminum TxDOT cap. Stake all remaining corners of the taking parcel as needed with 5/8 inch iron rod with a TranSystems plastic cap. TxDOT to supply the aluminum TxDOT right-of-way caps.
8. Any necessary traffic control will be in accordance with current TxDOT Traffic Control Plan for Surveying Operations

TOPOGRAPHIC SURVEYING AND PHOTOGRAMMETRY

A. Aerial Survey.

1. Digital Terrain Model (DTM) Development
   a. Developed using the specified breakline random point method
   b. Data collected to accurately depict the terrain and meet and/or exceeds the specified accuracy requirements for maps with 1' contours
   c. DTM to be provided in GEOPAK format
   d. DTM to be provided on CD
   e. Develop TIN file using breaklines and mass points
2. Digital Orthophoto Development
   a. Produce digital orthophotos of the specified area
   b. Provide a 0.25' pixel resolution
   c. Delivered in Tiff with Tiff world files and Descartes "hmr" format

B. Design Survey.

1. Establish horizontal and vertical control
   a. Control points will be set at approximately 1500' intervals
   b. Points will be located in areas that will be protected as much as practical from future construction
   c. Coordinates and elevations will be based on the TxDOT Dallas District VRS network. Differential levels will be run between control points for vertical quality
2. Supplemental topographic surveys
   a. Perform on the ground surveys of the areas that were obscured by vegetation or other causes from the aerial mapping.
   b. Check aerial information for accuracy and complete on the ground topographic survey sufficient to create design cross sections at 50 feet intervals.
   c. Detail drainage structures
   d. Verify top and flow line elevations of wet utilities.
3. Geotech
   a. Estimating 5 bore locations.
   b. Locations will be marked and actual location of bore will be surveyed after drilling.

OTHER SERVICES

SUBSURFACE UTILITY ENGINEERING

A. Criteria

The SUE work required for this project in general accordance with the recommended practices and procedures described in ASCE Publication CI/ASCE 38-02 (Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data). As described in the mentioned ASCE publication, four levels have been established to describe the quality of utility location and attribute information used on plans. The four quality levels are as follows:

- Quality Level D (QL"D") – Information derived from existing utility records;
- Quality Level C (QL"C") - QL"D" information supplemented with information obtained by surveying visible above-ground utility features such as valves, hydrants, meters, manhole covers, etc.
- Quality Level B (QL"B") – Two-dimensional (x,y) information obtained through the application and interpretation of non-destructive surface geophysical methods. Also known as "**designating**" this quality level provides the horizontal position of subsurface utilities within approximately one foot.
- Quality Level A (QL"A") – Three dimensional (x,y,z) utility information obtained utilizing non-destructive vacuum excavation equipment to expose utilities at critical points which are then tied down by surveying. Also known as "**locating**", this quality level provides precise horizontal and vertical positioning of utilities within approximately 0.05 feet.

B. Scope of Work

A QL "D" has already been completed for this project. The current scope of this work includes Quality levels A and B. The work limits consist of coverage of the proposed roadway improvements as shown on the schematic; approximately stations 10+50 to 25+50.

QL "B" designation will only be performed in areas of proposed infrastructure improvements, i.e.

not in the northbound lanes SH289, for example. This area is about as congested as an area of SUE QL "B" study can get. Not only are their areas of access control (PGBT mainlanes and KCS RR ROW), but the traffic lanes on SH289 are always flowing, even in off-peak hours. We anticipate needing traffic control setups in the SB outer lane as well as possibly inside lanes of Preston in areas where median roadway work is planned. We have assumed ten (10) QL "A" test holes for the sake of fee estimation; locations and quantities of actual holes requested can be determined based on conflict analysis from QL "B" SUE and the proposed design.

C. Designating Procedures

A suite of geophysical equipment (electromagnetic induction, magnetic) will be used to designate metallic/conductive utilities (e.g. steel pipe, electrical cable, telephone cable). Non-metallic/non-conductive utilities will be designated using other proven methods, such as rodding, and probing. Where access is available, a sonde will be inserted into the utility line (e.g. PVC gravity sewer pipe) to provide a medium for signal transmission, which can then be designated using geophysical equipment.

Accurate collection and recording of designated utilities is a critical component of the SUE process. The Engineer will produce detailed sketches depicting each utility as well as relevant surface features such as roadways, buildings, manholes, fire hydrants, utility pedestals, valves, meters, etc. Paint and pin flags will be used to designate the utilities in the field. A labeled pin flag or paint mark will be used to mark each location where a survey shot is required. Preliminary field sketches depicting the designated utilities will be

prepared for use during subsequent surveying activities. These sketches will also be used to check the survey information for completeness and accuracy.

D. Locating Procedures

The Engineer will utilize utility designating marks to layout the test hole locations. The Engineer will attempt to place the test holes outside of paved areas wherever possible. However, some test holes may need to be placed in paved areas that may require traffic control measures to be implemented. The Engineer will utilize non-destructive vacuum excavation equipment to excavate test holes at the required locations. Once each utility is located, the Engineer will record the utility type, size, material, depth to top, and general direction. Test hole excavations will be backfilled with appropriate material and the original surface will be restored. Test hole locations will be added to the previously mentioned field sketches for use during surveying activities.

E. Deliverables

SUE plans will be prepared depicting the type and horizontal location of the designated utilities.

The size of each utility will also be presented on the SUE plans if this information is indicated on

available record drawings. SUE plan sheets will be to TxDOT standards. Engineer will produce a summary sheet containing test hole field notes. A test hole data form will be prepared for each test hole following receipt of coordinate and elevation information from the surveyor. SUE plans depicting designated utility information will be revised to include test hole locations and utility sizes, where appropriate.

ENVIRONMENTAL

Project Understanding

The scope includes three separate tasks to cover the environmental documentation for the SH 289/PGBT improvements.

Task A – Prepare a Project Scope and Environmental Issues checklist for coordination with TxDOT

Task B – Prepare a Draft Programmatic Categorical Exclusion (PCE) following TxDOT's Standard of Uniformity for PCE documents without added capacity.

Task C – Prepare revisions to the Draft Programmatic Categorical Exclusion and a Final Programmatic Categorical Exclusion based on comments from TxDOT-Dallas District, TxDOT-Environmental Affairs Division and Federal Highway Administration (FHWA).

A. Scope of Work

Task A

Complete the "Project Scope and Environmental Issues" checklist on behalf of the Project Sponsor (City of Plano or TxDOT Dallas District). The checklist will be coordinated with the Department Delegate (assumed to be TxDOT Environmental Affairs Division) prior to proceeding with Tasks B and C. A meeting with TxDOT and the City of Plano will likely be necessary with this task.

Task B

Prepare a NEPA Programmatic Categorical Exclusion (PCE) following TxDOT's Standards of Uniformity for Programmatic Categorical Exclusions (most recent revisions 12/31/10). The PCE will follow the SOU Chapter 3. Documentation Format, No Added Capacity.

The Engineer will be responsible for the following unless otherwise noted as the responsibility of others. Required Right of Entry permissions will be provided by the City of Plano to allow the Engineer to enter private property for the purpose of conducting various environmental studies and investigations.

1) Cover Sheet-Prepare cover sheet for report

2) Existing Facility –Include a description of existing conditions using existing mapping.

3) Proposed Action
- Proposed Improvements
- Existing and Proposed Right-of-Way (ROW)
- Bicycle and Pedestrian Accommodations

4) Project Funding Information (to be provided by City of Plano)

5) Need and Purpose (to be provided by City of Plano)
- Traffic Analysis
- Crash Data (if available)

6) Logical Termini and Independent Utility

7) Alternatives (others)

8) Surrounding Area
- Land Use
- Natural Setting

9) Specific Area of Environmental Concern
- *Socioeconomics*
  - Community Impacts
  - Environmental Justice
  - Limited English Proficiency
  - Land Use (incl. Airway-Highway clearance)
  - Displacements
  - Bike/Ped
- *Section 4(f) Resources* – the Engineer will identify any 4(f) properties in the project area, but assumes the City of Plano will avoid the taking or constructive use of any such properties as part of the project. A Section 4(f) evaluation of the taking or constructive use of a 4(f) property is not included in this scope of work and can be added as a supplemental scope item.
- *Historic Properties* – the Engineer will perform Historic Studies following TxDOT's SOUs for Non-archeological Historic Age Resources. The Engineer will prepare a *Research Design* for coordination with TxDOT-ENV prior to conducting a field *Reconnaissance Survey*. Following the field survey a Reconnaissance Survey Report will be prepared for coordination with TxDOT-ENV and the State Historic

Preservation Officer (SHPO). An *Intensive Survey*, if needed, is not included in this scope of work and can be added as a supplemental scope item.

- *Archaeological Resources* – the Engineer will perform an *Archeological Background Study* following TxDOT's SOUs for *Archeological Background Studies*. A field visit and *Impact Evaluation* following TxDOT's SOUs for *Archeological Impact Evaluations* will be performed. An Archeological Survey is not proposed as part of this scope of work due to the disturbed nature of the project area, including the proposed right of way.
- *Air Quality* – the Engineer will perform Air Quality studies following TxDOT's SOUs for Air Quality. The non-added-capacity project is in Collin County, which is in Non Attainment for Ozone, and has Annual Average Daily Traffic (AADT) of less than 140,000 vehicles. Therefore, a qualitative analysis of Mobile Source Air Toxics is the appropriate level of study, and a Traffic Air Quality Analysis for Carbon Monoxide is not required.
- *Biological Resources*
    - Threatened and Endangered Species – the Engineer will perform a habitat assessment to determine whether habitat for protected species exists within the project area. Presence and absence surveys for protected species are not included in this scope of work and can be added as a supplemental scope item.
    - Farmland Protection Policy Act – the Engineer will assess the need to complete the Farmland Conversion Impact Rating form for Corridor Type Projects (SCS-CPA-106) and coordinate with the Natural Resources Conservation Service as appropriate.
    - Texas Parks and Wildlife Department – the Engineer will assess the project following the Memorandum of Understanding and Memorandum of Agreement between TxDOT and the Texas Parks and Wildlife Department (TPWD) and coordinate with TPWD as appropriate.
    - Invasive Species and Beneficial Landscaping
- *Water Quality*
    - Waters of the U.S. and Wetlands – the Engineer will perform a field jurisdictional determination and wetland delineation as necessary to assess the project's potential to affect Waters of the United States and therefore require a permit from the US Army Corps of Engineers (the Corps) under Section 404 of the Clean Water Act. Engineer assumes that any permitting requirements would be covered by a Nationwide Permit without the need for Pre-construction Notification to the Corps. A PCN is not included in this scope of work.
    - Section 303(d) list of Impaired Stream Segments
    - Section 402 Texas Pollutant Discharge Elimination System, incl. MS4
    - Floodplains
    - Wild and Scenic Rivers
- *Noise* – the Engineer will perform noise studies using traffic volumes provided by others for the estimated time of completion (ETC) year and the design year (ETC+20)
- *Hazardous Materials* – the Engineer will perform an Initial Site Assessment following TxDOT's SOUs with related input from the City of Plano, including information related to as-built plans, right of way plans, geotechnical borings and other site specific data.

10) Permits/Commitments-Provide documentation of any permits or commitments.

11) Public Involvement – the Engineer will attend and participate in a Public Meeting or Public Hearing and summarize the proceedings for inclusion in the environmental document.

12) Exhibits / Figures / Coordination

- Exhibits and Figures – the Engineer will prepare exhibits and figures for the environmental document and Public Meeting or Hearing as needed.
- Coordination – the Engineer will complete coordination, including letters, with appropriate regulatory agencies at the direction of the City of Plano. This would include Texas Parks & Wildlife Department, Texas Commission on Environmental Quality, Natural Resources Conservation Service. The Consultant assumes coordination with the Texas Historical Commission would be completed by TxDOT-ENV.

Task C

The Engineer will revise the Draft PCE completed under Task B in response to comments from the TxDOT Dallas District, TxDOT-ENV and FHWA. Multiple hard copies and electronic copies are assumed to be necessary for each review cycle.

LANDSCAPE

Provide landscape and irrigation plans for approximately 1,500 lineal feet of roadway renovation in accordance with the following scope of work:

- Identifying trees for protection and removal along entire scope of work
- Repairing medians and adjacent property/ROW
- Medians will be sodded that are 5' in width or greater
- Sodded areas will be irrigated until which point grass is established.

Scope of services follows:

- Make site visit and analysis of existing conditions.
- Prepare preliminary landscape plan for public meeting.
- Prepare construction drawings and specifications for landscape and irrigation including landscape
    - plan, plant list, landscape details and notes, irrigation plan, details and notes. (TranSystems will
    - provide water meter detail for irrigation supply.) Landscape includes median treatment and
    - adjacent impacted areas especially along the west ROW (landscape to include sod and possibly
    - trees). We assume that the medians will be fully irrigated.
- Prepare 60% and 90% submittals which will include 1-2 tree removal/protection sheets with
    - details, 2 landscape plans (to fit site at 1" = 20') , 2 irrigation plans, 1 landscape detail sheet, 1
    - irrigation detail sheet.
- Make revisions per City/TxDOT comments
- Prepare cost estimate at submittals
- Coordinate tree locations with proposed light poles and utilities

GEOTECHNICAL SERVICES

A. Project Description and Site Geology

The project consists of expansion of Preston Road between Alliance Boulevard and Lloyd Circle in Plano, Texas. The planned addition consists of approximately 1,400 linear feet of the

southbound lanes (from Station 11+00 to Station 25+00). The expansion will include the addition of lanes, sidewalk, and two bridges; one over the existing railroad (Kansas City Southern Railroad) and another over the President George Bush Turnpike. The geotechnical investigation for the project will be performed in accordance with prevailing Texas Department of Transportation (TxDOT) guidelines.

The project site overlies the Cretaceous Austin Chalk Formation. Based on experience in the area, the top of unweathered limestone is anticipated at approximated depths of 20 to 25 feet.

B. Field Investigation

Considering the type of structures and anticipated site geology, it is recommended subsurface conditions be evaluated with 5 core borings, or approximately 1 boring per 300 linear feet. Two borings will be drilled at the terminal points (one near the Alliance Boulevard and another near the driveway north of Lloyd Circle). The remaining three borings will be drilled at the locations of the bridges. Borings for the pavement expansion will be extended at a minimum of 15 feet below existing grades. The bridge borings will be extended 25 feet into gray, unweathered limestone. Based on our experience in the area, we anticipate top of unweathered limestone at an approximate depth of 25 feet below present grade. Therefore, boring depths of 15 to 50 feet are estimated for the purpose of the budget.

Borings will be sampled continuously to a depth of 10 feet, and at maximum five-foot intervals thereafter. Samples of cohesive soils will be obtained using three-inch diameter pushed tubes. Cohesionless soils (sands and gravels) will be sampled and evaluated in-situ by use of the Standard Penetration test (SPT). Weathered and unweathered limestone will be either cored using double-tube, NX-size core barrels or, evaluated in-situ using TxDOT cone penetrometer.

Observations will be made in the open borings subsequent to drilling to evaluate ground water conditions. Borings will be backfilled at the completion of field operations. Any artificial surface (i.e., asphalt or concrete) will be patched with similar materials.

Precautions will be taken during the field investigation to avoid damage to underground utilities and structures. However, TranSystems will not be liable for damage to utilities or structures not identified on plans provided to us, or are improperly located in the field by other parties.

Control of traffic on certain lanes of SH289 will be required to allow for drilling and soil sampling. The traffic control plan and necessary equipment will be provided by a third party. It is estimated that three working days will be required to complete the field investigation.

C. Laboratory Investigation

Upon return to the laboratory, all samples will be visually classified by the project engineer or engineering geologist in accordance with the Unified Soil Classification System (USCS). Each sample of cohesive soil will be evaluated for consistency by use of a pocket penetrometer test.

Selected samples will be subjected to classification tests and tests to evaluate strength, deformation, and shrink/swell characteristics. Anticipated classification tests consist of Atterberg Limits, moisture content, and grain size determinations. Strength and deformation will be evaluated by use of unconfined compression tests. Soil shrink/swell potential will be evaluated by use of classification tests.

D. Engineering Services

The results of the field and laboratory investigations will be evaluated and presented with our recommendations in a bound report. The report will address the following:

1. Description of the soil and ground water conditions as they relate to the performance and construction of the project;
2. Foundation alternatives to include constructability and magnitude of anticipated movement;
3. Lateral loads for design of below-grade or retaining walls;
4. Pavement subgrade conditions and recommended stabilization, if applicable;
5. Pavement sections based on traffic data provided by the client;
6. Earthwork and testing recommendations; and
7. Global stability analysis for the proposed retaining walls

PUBLIC INVOLVEMENT

The city of Plano will notify affected property owners regarding the works being completed. Should it be determined that a public meeting is required, the Engineer shall provide technical assistance, preparation of exhibits for, and minutes of said meeting to inform the public of impacts to neighborhoods and businesses due to roadway shutdowns, detours and access restrictions.

ACCESSIBILITY DOCUMENTATION

Engineer shall prepare plans in accordance with Texas Accessibility Standards (TAS). During the design process, the Engineer shall provide for input regarding design by a registered TAS inspector to assure compliance with accessibility requirements. Once plans are completed, the TAS inspector will provide inspection of the final plans to assure compliance with accessibility requirements.

EXCLUSIONS

1. Environmental studies beyond a programmatic categorical exclusion
2. Design of franchise or municipal utilities other than minor adjustments
3. Engineering of roadway improvements beyond that shown on the TxDOT approved concept schematic
4. Landscaping other than plantings on the SH 289/PGBT bridge and sod replacement in median and parkway.
5. Preparation for and attendance at more than one public meting
6. Pavement design
7. Drainage studies design outside of the right of way including any floodplain modeling
8. Any special aesthetic design considerations such as hardscape or special surface treatments beyond normal standards
9. Revision of plans once approved by the city of Plano and TxDOT
10. Bid or Construction phase services.

CITY OF PLANO
SH 289 at PGBT
EXHIBIT B

Activity	Duration (Calendar Days)
Notice to Proceed	1
Surveys/SUE	30
Preliminary Design	15
Geotechnical	21
Environmental	30
City Review	10
TxDOT Review	30
Bridge and Retaining Wall Design (PGBT)	30
Bridge Design (KCS)	30
Final Design	60
Landscape Design	30
City Review	10
TxDOT Review	30
Public Meeting	1
Cost Estimate	5
Total	333

EXHIBIT C

COMPENSATION AND METHOD OF PAYMENT

SH 289 at PGBT INTERSECTION IMPROVEMENTS

Services performed under this Engineering Services Agreement shall be paid on a lump sum basis at the amounts shown on the breakdown below:

TASK	FEE
BASIC SERVICES	
A. Preliminary Design	$17,788
B. Final Design	$121,518
C. Bridges/Retaining Walls	$135,626
SUBTOTAL BASIC SERVICES	**$274,932**
SPECIAL SERVICES	
A. Survey	$28,512
B. Subsurface Utility Engineering	$33,000
C. Environmental	$29,000
D. Landscape	$8,000
E. Geotechnical	$14,000
F. Public Involvement	$3,132
G. Accessibility	$3,000
H. Reimbursables	$14,000
SUBTOTAL SPECIAL SERVICES	**$132,644**
TOTAL FEE	**$407,576**

EXHIBIT "D"

ENGINEERING

INSURANCE

INSURANCE: (Review this section carefully with your insurance agent prior to bid or proposal submission. See "Insurance Checklist" on the last page or specific coverages applicable to this contract).

1. General Insurance Requirements:

1.1 The Engineer (hereinafter called "Engineer") shall not start work under this contract until the Engineer has obtained at his own expense all of the insurance called for here under and such insurance has been approved by the City. Approval of insurance required of the Engineer will be granted only after submission to the Purchasing Agent of original, signed certificates of insurance or, alternately, at the City's request, certified copies of the required insurance policies.

1.2 All insurance policies required hereunder shall be endorsed to include the following provision: "It is agreed that this policy is not subject to cancellation, non-renewal, without first providing the Risk Manager, City of Plano, at least ten (10) days prior written notice."

1.3 No acceptance and/or approval of any insurance by the City shall be construed as relieving or excusing the Engineer from any liability or obligation imposed upon the provisions of the Contract.

1.4 The City of Plano (including its elected and appointed officials, agents, volunteers, and employees) is to be named as an additional insured under Engineer's General Liability Policy, and the certificate of insurance, or the certified policy, if requested, must so state. Coverage afforded under this paragraph shall be primary as respects the City, its elected and appointed officials, agents and employees.

1.4.1 The following definition of the term "City" applies to all policies issued under the contract:

The City Council of the City of Plano and any affiliated or subsidiary Board, Commission Authority, Committee, or Independent Agency (including those newly constituted), provided that such affiliated or subsidiary Board Commission, Authority, Committee, or Independent Agency is either a Body Politic created by the City Council of the City of Plano, or one in which controlling interest is vested in the City of Plano; and City of Plano Constitutional Officers.

1.5 The Engineer shall provide insurance as specified in the "Insurance Checklist" (Checklist) found on the last page of the bid or proposal form. Full limits of insurance required in the Checklist of this agreement shall be available for claims arising out of this agreement with the City of Plano.

1.6 Engineer agrees to defend and indemnify the City of Plano, its officers, agents and employees as provided in Paragraph VII. of this contract.

1.7 Insurance coverage required in these specifications shall be in force throughout the Contract Term. Should the Engineer fail to provide acceptable evidence of current insurance within seven (7) days of written notice at any time during the Contract Term, the City shall have the absolute right to terminate the Contract without any further obligation to the Engineer, and the Engineer shall be liable to the City for the entire additional cost of procuring performance and the cost of performing the incomplete portion of the Contract at time of termination.

1.8 Written requests for consideration of alternate coverages must be received by the City Purchasing Manager at least ten (10) working days prior to the date set for receipt of bids or proposals. If the City denies the request for alternative coverages, the specified coverages will be required to be submitted.

1.9 All required insurance coverages must be acquired from insurers authorized to do business in the State of Texas and acceptable to the City. The City prefers that all insurers also have a policyholder's rating of "A-" or better, and a financial size of "Class VI" or better in the latest edition of A.M. Best, or A or better by Standard and Poors, unless the City grants specific approval for an exception.

1.10 Any deductibles shall be disclosed in the Checklist and all deductibles will be assumed by the Engineer. Engineer may be required to provide proof of financial ability to cover deductibles, or may be required to post a bond to cover deductibles.

2. <u>Engineer's Insurance - "Occurrence" Basis:</u>

2.1 The Engineer shall purchase the following insurance coverages, including the terms, provisions and limits shown in the Checklist.

2.1.1 Commercial General Liability - Such Commercial General Liability policy shall include any or all of the following as indicated on the Checklist:

i. General aggregate limit is to apply per project;

ii. Premises/Operations;

iii. Actions of Independent Contractors;

iv. Contractual Liability including protection for the Engineer from claims arising out of liability assumed under this contract;

v. Personal Injury Liability including coverage for offenses related to employment;

vi. Explosion, Collapse, or Underground (XCU) hazards; if applicable. This coverage required for any and all work involving drilling, excavation, etc.

2.1.2 Business Automobile Liability including coverage for any owned, hired, or non-owned motor vehicles and automobile contractual liability.

2.1.3 Workers' Compensation - statutory benefits as required by the State of Texas, or other laws as required by labor union agreements, including Employers' Liability coverage.

3.0 Engineer's Insurance – Claims Made

Professional Errors and Omissions

The Engineer shall carry Professional Liability insurance which will pay for injuries arising out of negligent errors or omissions in the rendering, or failure to render professional services under the contract, for the term of the Contract and up to three years after the contract is completed in the amount shown in the Checklist.

Professional Errors and Omissions, Limit $1,000,000
per claim and aggregate of $2,000,000

ENGINEERING

City of Plano - Insurance Checklist

("X" means the coverage is required.)

Coverages Required	Limits (Figures Denote Minimums)
_X_ 1. Workers' Compensation & Employers' Liability	Statutory limits of State of Texas $100,000 accident $100,000 disease $500,000 policy limit disease
___ 2. For Future Use	
___ 3. City Approved Alternative Workers' Comp. Program	$150,000 medical, safety program
_X_ 4. General Liability	Complete entry No. 26 Minimum $500,000 each occurrence $1,000,000 general aggregate
_X_ 5. General aggregate applies per project (CGL)	
_X_ 6. Premises/Operations	(Items No. 3-10 & 12 require)
_X_ 7. Independent Contractors	$500,000 combined single limit for bodily injury and property damage
___ 8. Products	damage each occurrence with
___ 9. Completed Operations	$1,000,000 general aggregate that applies to project under contract
_X_ 10. Contractual Liability	
_X_ 11. Personal Injury Liability	$500,000 each offense & aggregate
___ 12. XCU Coverages	
_X_ 13. Automobile Liability	$500,000 Bodily Injury & Property
_X_ 14. Owned, Hired & Non-owned	Damage each accident
___ 15. Motor Carrier Act Endorsement	
X_ 16. Professional Liability	$1,000,000 each claim $2,000,000 aggregate
___ 17. Garage Liability	$_____BI & PD each occurrence

___ 18. Garagekeepers' Legal $_____- Comprehensive
$_____- Collision

___ 19. Owners Protective Liability $500,000 Combined single limits

_X_ 20. City named as additional insured on General Liability policy. This coverage is primary to all other coverages the City may possess.

_X_ 21. City provided with Waiver of Subrogation on Workers' Compensation or Alternative program if applicable.

_X_ 22. Ten (10) days notice of cancellation, non-renewal, endorsement required. The words "endeavor to" and "but failure" (to end of sentence) are to be eliminated from the Notice of Cancellation provision on standard ACORD certificates.

_X_23. The City of Plano prefers an A.M. Best's Guide Rating of "A-", "VI" or better or Standard and Poors Rating AA or better; Authorized to do business in the State of Texas (not applicable for workers' compensation assigned through pool or alternative compensation programs).

_X_ 24. The Certificate must state project title and project number.

_X_ 25. Other Insurance Required:

EXHIBIT "E"

AFFIDAVIT OF NO PROHIBITED INTEREST

I, the undersigned declare that I am authorized to make this statement on behalf of TranSystems Corporation dba TranSystems Corporation Consultants and I have made a reasonable inquiry and, to the best of my knowledge, no person or officer of TranSystems Corporation dba TranSystems Corporation Consultants is employed by the City of Plano or is an elected or appointed official of the City of Plano within the restrictions of the Plano City Charter.

I am aware that Section 11.02 of the City Charter states:

"No officer or employee of the city shall have a financial interest, direct or indirect, in any contract with the city, nor shall be financially interested, directly or indirectly, in the sale to the city of any land, or rights or interest in any land, materials, supplies or service. The above provision shall not apply where the interest is represented by ownership of stock in a corporation involved, provided such stock ownership amounts to less than one (1) per cent of the corporation stock. Any violation of this section shall constitute malfeasance in office, and any officer or employee of the city found guilty thereof shall thereby forfeit his office or position. Any violation of this section with the knowledge, express or implied, of the persons or corporation contracting with the city shall render the contract voidable by the city manager or the city council."

I further understand and acknowledge that a violation of Section 11.02 of the City Charter at anytime during the term of this contract will render the contract voidable by the City.

TranSystems Corporation dba TranSystems Corporation Consultants
Name of Consultant

By: _____
Signature

GARY KEAUS
Print Name

VICE-PRESIDENT
Title

10/4/12
Date

STATE OF TEXAS §
§
COUNTY OF DALLAS §

SUBSCRIBED AND SWORN TO before me this 4 day of October, 2012.

Elizabeth P. McCabe
Notary Public, State of Texas

NOTARY PUBLIC STATE OF TEXAS
ELIZABETH P McCABE
Notary Public
State of Texas
My Comm. Exp. 10-07-2015