HISTORIC
FRANKLIN
TENNESSEE

ITEM #16
WRKS 05/08/2012

MEMORANDUM

May 1, 2012

TO: Board of Mayor and Aldermen

FROM: Eric Stuckey, City Administrator
David Parker, P.E., City Engineer/CIP Executive
Paul Holzen, P.E., Director of Engineering
Jonathan Marston, P.E., Staff Engineer II

SUBJECT: Consideration of 2-Lane Roadway Options for South Carothers Parkway

Purpose

The purpose of this memo is to provide information to the Board of Mayor and Aldermen (BOMA) about 2-lane design options for the section of South Carothers Parkway, which stretches from Falcon Creek subdivision to the Highlands at Ladd Park.

Background

In 2007, the City of Franklin entered into a Professional Services Agreement (PSA) with Sullivan Engineering, Inc. (SEI) to provide full engineering design services and documents for the South Carothers Project, with project limits from the Falcon Creek subdivision to the Highlands at Ladd Park subdivision. In 2009, a separate PSA was approved to allow SEI to design a section of South Carothers Parkway, which is contained within the Highlands at Ladd Park subdivision. The ultimate design for South Carothers Parkway called for 2-12 foot lanes in each direction, raised median, sidewalk, a multi-use path, curb and gutter, and lighting.

However, recent economic times and the constant need to stretch available funding, has compelled the City to explore other design alternatives. The two basic design alternatives to consider are:

- Option 1 – 2 Lanes Curb & Gutter and single sidewalk with grading to support future 4-lane section
- Option 2 – 2 Lane Ditch section, no sidewalk, with grading to support future 4-lane section

It is important to realize that both alternatives will utilize the northbound lanes of the ultimate 4-lane roadway; this will minimize future waste. Both alternatives can be designed and constructed with or without roadway lighting. While some modification is necessary for both alternative designs, much more is required for the open ditch section. Also, the open ditch alternative, while more affordable upfront, comes with some unique challenges. The right-of-way for this project was purchased with a 4-lane, curb and gutter typical section in mind. Modifying the design to allow for ditches may necessitate the purchase of additional construction and/or slope easements. The alternative would be to keep all slopes within existing right-of-way, which could potentially create maintenance difficulties (i.e. mowing steep slopes). Steep slopes and clear zone issues could require the use of guardrail along portion of the project. These issues will not be known until the design progresses.

Choosing either 2-lane alternative will require design modifications. Those design costs, along with the most recent construction estimates are provided below.

Financial Impact
The costs as negotiated with SEI for the design & additional services and the latest construction estimates are as follows:

- Option 1 – Two Lane Curb & Gutter, Single Sidewalk, Grading to support future 4-lanes
  - Additional Design: $262,970.00 (Incl. $34,640.00 Lighting Design Allowance)
  - Construction Estimate: $12,100,000.00 (Incl. $500,000.00 Lighting Alternate)
  - TOTAL: $12,362,970.00 (Incl. $534,640.00 for Lighting)

- Option 2 – Two Lane Ditch Section, No Sidewalk, Grading to support future 4-lanes
  - Additional Design: $406,350.00 (Incl. $34,640.00 Lighting Design Allowance)
  - Construction Estimate: $11,000,000.00 (Incl. $500,000.00 Lighting Alternate)
  - TOTAL: $11,406,350.00 (Incl. $534,640.00 for Lighting)

Also, the existing PSAs with SEI, for the design of the full 4-lane South Carothers, have a remaining contractual value of $49,148.14.

Recommendation
If the BOMA chooses to proceed with one of the options presented above, staff recommends terminating the open design services PSAs with SEI and transferring the remaining funds to the selected option. Also, staff recommends that BOMA authorize the City Administrator to enter into a standard PSA (COF Contract 2012-078) with SEI on behalf of the City of Franklin contingent on the City Engineers and City Attorney Approval.

Based on City Street Standards and other previous phases of Carothers Drive, Option 1 (two lane with curb and gutter, single sidewalk and grading to support future four-lane construction) is recommended.

SULLIVAN ENGINEERING, INC.
317 Main Street, Suite 201
Franklin, TN 37064

April 20, 2012

Mr. Paul Holzen, P.E.
Interim Director of Engineering
109 3rd Avenue South
P.O. Box 305
Franklin, TN 37064

RE: South Carothers Parkway, Roadway Design
From south of Falcon Crest Development
To north of the Ladd Development
City of Franklin, Tennessee
Williamson County

Dear Paul,

Sullivan Engineering, Inc. (SEI) is pleased to submit a proposal for engineering design services associated with the development of the subject project. To assist Franklin's City Administrators in allocating funds for the design and construction of South Carothers Parkway, SEI has broken this proposal into various design services covering Preliminary/Right-of-way and Construction. In addition please find a section covering optional Construction Engineering Services for your review should you desire to include these services to the scope of services.

Design Services

Preliminary/Right-of-Way Design Documents
The initial step in the design process will be to update topographical and geotechnical data allowing our design team the ability to construct a computerized 3-D topographic model. At completion of the 3-D model our design team can use the computerized model to update the original horizontal and vertical alignments for review with city officials. Upon acceptance of the proposed alignment by City staff preparations will begin for design of right-of-way acquisition documents followed with final design and construction bid package. It is not anticipated retaining walls will be required as part of the project.

Construction Design & Bidding Documents

Consist of preparing the final construction bid package. The construction design phase will consist of final coordination efforts between City and State Environmental officials in preparation of necessary water quality permits necessary prior to authorization of construction and issuance of the contractors "Notice to Proceed" being issued. Construction design documents will include a list of standard drawings, general notes, special details and special provisions as issued by the TN Department of Transportation for inclusion into the construction bid package. Final construction design elements will consist of creating tabulated and estimated quantities and associated footnotes. The final bid package will be based on the "Standard Specifications of The TN Department of Transportation, dated March 1, 2006" and Special Provisions contained in the construction bid package. The construction bid package will be based on the "Engineering Joint Council Document Committee" (EJCDC) contract format. An engineer's

estimate of probable cost will be developed during the construction design phase based on itemized quantities contained within the project manual.

The following outline indicates engineering services associated with the development of right-of-way acquisition and construction bid documents for your review and acceptance

1) **Right-of-Way Engineering Design Documents (North Bound)**
    1) Topographic Survey
        i) Update
            (1) Property owner and Utility contact information
            (2) Update per field observations
        ii) Initial property owner and utility owner contacts
    2) Preliminary Roadway Design Documents
        i) Modify approved preliminary plans for construction of the two north bound lanes
            (1) Coordinate modifications with the Project Engineer
    3) Modify existing Cross-Sections
        i) 50ft. Interval
        ii) Geotechnical data incorporated into design
    4) Issue roadway design plans for utility coordination purposes,
    5) Review design with city officials
    6) Hydraulic analysis
        i) Coordinate with Franklin's Storm Water regulations
        ii) Identify Permanent drainage easements
        iii) Size hydraulic crossings
            (1) Q50 Design for cross drains
            (2) Q10 Design for side drains
    7) Prepare Water Quality Permits.
        i) All review and application fees to be paid by the city
    8) Initiate traffic control plan
    9) Initiate erosion control plan
    10) Bridge Design (North Bound)
        i) Initiate final review of Northbound bridge only
    11) Attend Field Reviews and Meetings

2) **Construction Engineering Design and Bid Documents**
    1) Finalize roadway construction bid documents,
        i) Unit Price Bid
        ii) Construction Specifications (City of Franklin Format),
    2) Coordinate construction details with City officials
    3) Cross Sections at 50' intervals
    4) Review final design with utilities for construction coordination purposes
    5) Final review with Franklin's Storm Water Regulations
    6) Estimated and tabulated Construction Quantities
        i) Prepare tabulated items
        ii) Prepare contract Bid Form
        iii) Engineers estimated probable cost of construction
    7) Roadway design details
            i) General Notes,
            ii) Special notes,
            iii) Standard drawings,
            iv) Special details

8) Finalize Box/Slab culvert crossing design documents
9) Finalize Traffic Control Design
10) Finalize Erosion Control Design
    i) Prepare final Water Quality Permits
        (1) Submit to appropriate agencies for review and acceptance
        (2) All fees to be paid by the City of Franklin
11) Prepare Pavement Marking and Signing Layout documents
12) Prepare construction bid documents
    i) Attend bid opening
    ii) Open bids
    iii) Review bid submittals
    iv) Prepare and verify bid tabulation
13) Issue final design documents and construction contract
    i) Attend and conduct pre-construction meeting
        (1) Issue a construction notice to proceed
14) Attend Field Reviews and Public Meetings

3) <u>Optional - Construction Administration Services</u>

1) Maintain a project correspondence file
    i) Distribute meeting minutes
    ii) Distribute contractor's Applications for Payment
    iii) Distribute Shop Drawings
    iv) Distribute contract documents as required.
2) Attend project meetings
    i) Schedule and attend a project pre-construction meeting
        (1) Issue a construction notice to proceed
    ii) Schedule and attend monthly project meetings
    iii) Attend on site meetings with city and contractor as required.
    iv) Attend substantial and final field review meetings
    v) Attend other project meetings as required.
3) Maintain construction documents
    i) Prepare and distribute
        (1) Revisions
        (2) Change orders
        (3) Change directives
        (4) Review and approve shop drawings
        (5) Issue supplemental instructions
4) Review and approve contractor's application for payments
    i) Visit construction site to check quantity and quality of work
    ii) Check material tickets
    iii) Compare and evaluate estimated quantity with contractors request
5) Review construction schedule
    i) Notify owner and contractor as required
6) Review shop drawings
    i) Verify compliance with contract specifications
    ii) Distribute as required
    iii) Review request for substitutions
7) Review erosion features
    i) Installation
    ii) Maintenance

8) Prepare project closure documents
9) Construction Testing & Observation
   i) Observe roadway and structure testing operations,
   ii) Observe quality control and installation of materials,
   iii) Field visits with written reports as required.

The following summary represents the estimated fee necessary for our design team to complete these projects:

COMPENASTATION TABLES

Engineering Design Services (Lump Sum)

SEI Design Services	
Right-of-Way Plans	$120,700
Construction Plans	$64,990
Sub-Total SEI Design Services	***$185,690***
Consultant Design Services	
Topographic Survey update	$2,880
Survey Stake (Allowance for R-O-W, Esm't, Center line)	$6,900
Structural Design (Final North Bound Bridge)	$11,730
Structural Analysis (Allowance for utility analysis)	$20,130
Roadway Lighting (Allowance)	$34,640
Reproduction Cost (Review Plots & PDF's by SEI all other reproduction cost by City)	$1,000
Sub-Total Consultant Design Services	***$77,280***
Total Phase Two Design Cost	***$262,970***

COMPENSATION:

This project will be developed in accordance with City of Franklin and current T.D.O.T. (English) Design Guidelines, Standard Drawings and Special Provision in the development of this project. The design fee is based on a lump sum basis and shall include all items listed within the Scope of Work, computer plotting, and travel expenses. All printing for field reviews, public meetings and construction bids shall be the Responsibility of the City of Franklin. All documents shall be computer generated in an AutoCAD format and reproduced in a Portable Document Format (PDF) suitable for printing.

Please find enclosed the following for your review and to further explain the scope of services to be performed as part of this project:

- Proposed Improvements;
- Scope of Work,
- Design and Construction Schedule

I hope this proposal meets with your approval. Please phone after you have had a chance to review this proposal or if there are any questions.

Sincerely,
Sullivan Engineering, Inc.

Paul Collins

Paul V. Collins, Jr.
Vice President

Enclosure

PROPOSED IMPROVEMENTS

Project length 9,000+/- L.F. (includes 1,300+/-L.F. of side road)

Design development of this project will be based on preliminary design documents prepared by Sullivan Engineering, Inc. as submitted to the City of Franklin for review and acceptance in fiscal year 2007 - 2008. This project is a new alignment beginning south of the Falcon Crest Development and extending 7,700+/- l.f. south to a point of intersection with Truman Lane in the Ladd Development as noted on the City's Major Thoroughfare Plan. The city's Major Thoroughfare Plan classifies South Carothers Parkway as an urban collector street with a design speed of forty-five (45-MPH) miles per hour.

The proposed roadway template will modify the original design template of two (12'-0") basic lanes in each direction with four (4') foot bicycle lanes along each side flanked with 6-30 curb and gutters within a one hundred thirty foot (130), foot minimum right-of-way. Additional grading shall be performed for the future 30'-0" raised sod median and south bound lanes inclusive of the multiuse path. As a result of the modification to the template the original drainage design shall be re-evaluated and modified as necessary for special ditches to insure positive drainage. With property acquisition being completed for the original design all attempts will be made to work within existing parameters, however; additional easements may be required at various locations throughout the construction limits.

The storm drainage design shall be based on a ten year design storm frequency with all cross drains based on a fifty year design storm frequency. All storm drainage and erosion control shall be done in accordance with current water quality regulations. As part of this original design project an environmental and archeological assessment was conducted in accordance with current State of Tennessee Department of Transportation guidelines and shall be used as is within this design.

Original design documents included dual structures with multi-spans, across the Harpeth River, which later included utilities to be hung between the beams. The original design did not include the utility aspect therefore, as this was added a later date the utility loads had to be spread over both structures. Since it is proposed to construct the north bound only no changes or analysis are anticipated with this scope of services. However, should conditions change and additional utilities are to be included on the north bound structure an allowance has been established to perform a structural analysis. If load capacity is exceeded as a result of the additional utility installations the structure would require a redesign.

All front slopes shall be a 3:1 minimum extending to the clear zone. All areas disturbed during the construction of this project shall receive topsoil and sod. Temporary seeding will be used as necessary for water quality control measures as the construction process progresses. Vertical and horizontal alignments shall be designed for a 45-mile per hour design speed with emphasis placed on minimizing the impact to adjoining property owners. Horizontal and vertical design criteria shall be in accordance with approved guidelines established within the TN. Dept. of Transportation.

It is not anticipated at this time, a need for any storm water drainage system other than Class III Reinforced Concrete Pipe. However, box or slab culverts may be required for construction of the cross drain drainage system. Box or slab culverts used in the construction of this project shall be selected from standard design culverts available from the TN. Dept. of Transportation Standards.

Roadway Improvements may require the relocation of water, gas, sewer, telephone and cable TV lines. All utility relocation design shall be the responsibility of the owner or their assigned representative and not within the scope of the proposal.

Currently no utilities exist along the proposed South Carothers Parkway corridor, however; roadway

improvements of this magnitude will typically include construction of future major electrical, water, gas, sewer, telephone and cable TV lines including customer service connections. However roadway improvements at exiting local street connections may require the relocation of water, gas, sewer, telephone and cable TV lines. All utility relocation design shall be the responsibility of the owner or their assigned representative and not within the scope of the proposal.

Also, it is noted that in keeping with the City's Traffic Operation Center, a conduit for fiber optic communications cable shall be provided behind the curb for future traffic signals. This provision will facilitate the City's efforts to include the corridor's traffic signals in a future traffic signal system.

STRUCTURAL ENGINEERING AND HYDRAULIC ANALYSIS SCOPE OF SERVICES
(Services for the engineering effort required for hydraulic and bridge analysis).

It is proposed to make any changes to the north bound bridge, therefore efforts will be limited to completion of the construction bid documents based on the current design.

Bridge analysis (allowance)associated with relocating all utilities from the dual bridges (north and south bound) to the original design of the northbound bridge has been included in the event all utilities are relocated. Supplemental design services (if required) for redesign of the northbound bridge will be determined at a later date if the analysis of the original structure design fails as a result of the increased loads.

Based on initial research it is not anticipated that the original hydraulic model will not require any additional submittals for approval by governing authorities. However, as a result of the design change based on construction of the southbound abutments only the water quality permits will need to be modified and resubmitted for approval.

Construction Services are not included in this proposal, however, our design teams is experienced with construction services and Construction Engineering Inspection (CEI) and can provide these services.

SCOPE OF WORK

All documents will be developed in accordance with City of Franklin and current T.D.O.T. (English) Design Guidelines, Standard Drawings and Special Provision in the development of this project. The following list is representative of documents to be generated in the development of a construction bid package.

1) **Title Sheet**
   a) Right-of-Way/Construction

2) **Typical Sections**
   a) Mainline
   b) Cross-Road
   c) Traffic Control
   d) Private Drives/Field Entrances/Business Entrances
   e) Paving Schedule
      i) Construction Documents Only

3) **Construction Details**
   a) Special Details
   b) General and Special Notes
   c) Scope of Work
   d) Itemized T.D.O.T. Standard Drawings List
   e) Itemized Construction Quantities
      i) At completion of Construction Documents

4) **Tabulated Data**
   a) Private Drives/Field Entrances/Business Entrances
   b) Erosion Control
   c) Traffic Control
   d) Roadside Ditch and Cross Drainage
   e) Paving Quantities
   f) Signing & Pavement Markings
   g) Estimated Construction Quantities

5) **Property Map**
   a) Right-of-Way Notes
   b) Acquisition Block
      i) Footnote erosion control easements.
      ii) Footnote temporary construction easements.
   c) Identify parcels impacted by construction
   d) Update property owner information

6) **Present Layout**
   a) Scale 1" = 50'
   b) Existing topographic data and boundary information
   c) Proposed Right-of-Way/Easement requirements

7) **Proposed North Bound Bridge Layout/Drainage**
   a) Scale as required'
   b) Construction details as required
   c) Coordination with Government Agencies as required

8) Proposed Layout/Drainage

a) Scale 1"=50'
b) Construction details as required
c) Permanent Pavement Markings
d) Permanent Signing
e) Drainage
    i) Special ditch
    ii) Storm
    iii) Cross Drainage system
    iv) Bridge layout

9) Proposed Profiles/Drainage

a) Scale (1"=50'Horiz. & 1"=5'Vert.)
b) Storm and Cross Drainage systems
c) Existing utilities
d) Drainage tabulation tables
e) Hydraulic data

10) Private Drive Entrance Profiles

a) Scale (1"=50'Horiz. & 1"=5'Vert.)
b) All Drives will be surfaced in accordance with TDOT Design Guidelines
c) Side drain requirements

11) Culvert Sections (as required)

a) Reinforced concrete pipe Class III
b) Box or slab TDOT approved culverts
c) Hydraulic data

12) Cross-Sections

a) Modify existing drawings to show proposed and future
    i) 50' Intervals
b) Geotechnical data to be included
c) To be included in:
    i) Right-of-Way Design Phase
    ii) Construction Design Phase

13) Utility Information Plan

a) Schematic plan prepared by SEI.
    i) Schematic plan to be based on data furnished SEI by the various utility companies.

14) Topographic Survey

a) Update
    i) Property owner and Utility contact information
        (1) Update per field observations
    ii) Initial property owner and utility owner contacts

15) Drainage Map

a) Major basins as required

16) Project Reviews

a) Right-Of-Way

b) Construction
c) As required with City Officials

17) Project Coordination and Management

a) By SEI & City of Franklin
b) Coordinate with appropriate Government agencies as required

18) Traffic Control

a) In accordance with the "Uniform Manual on Traffic Control Devices"
b) Maintain Traffic During Construction
   i) Temporary one lane Traffic during Daytime operations
   ii) Two lane Traffic during Nighttime operations
c) Per local, state and federal guidelines

19) Erosion Control

a) Per Current City of Franklin and T.D.E.C. Guidelines
b) Prepare necessary State and Federal Permits
   i) Submittal and fees by City of Franklin

20) Construction Bid Documents by SEI

a) Unit Price Bid
b) T.D.O.T. pay item units and descriptions
c) Bid documents per City format

Exclusions:

- Aerial survey
- Offsite drainage study
- Utility relocation design
- Roadway Lighting
- Water quality mitigation
- Structures (retaining walls)
- Signalization Design
- Traffic counts, analysis and projections
- Geotechnical Explorations/Paving Design
- Environmental and Erosion Control mitigation design plans
- Environmental Assessment/Document Review
- Air and Noise Environmental Assessment
- Remediation of karsts features

CONSTRUCTION AND DESIGN SCHEDULE

South Carothers Parkway Project length 9,000+/- L.F. (1,300+/-L.F. of side road) TASK	DAYS TO COMPLETION	DATE OF COMPLETION
Issue work order (1)		6/1/2012
Begin Survey	3	6/4/2012
Preliminary Survey Due	14	6/18/2012
Begin Preliminary Design	-17	6/1/2012
Review preliminary Design with City Officials	**21**	**6/22/2012**
Advertise for Design Public Hearing (N/A)	0	6/22/2012
Hold Design Public Meeting (N/A)	0	6/22/2012
Receive Design Public Meeting Comments (N/A)	0	6/22/2012
Finish Survey	3	6/25/2012
Begin Utility Design Coordination	-3	6/22/2012
Finish Preliminary Design (N/A)	0	6/22/2012
Begin Right-of-Way Design (2)	**0**	**6/22/2012**
Begin Water Quality Permit Process	0	6/22/2012
Submit for Right-of-Way Field Review	21	7/13/2012
Hold Right-of-Way Field Review	5	7/18/2012
Finish Final Right-of-Way Plans	**5**	**7/23/2012**
Begin Property Appraisals	-31	6/22/2012
Submit Water Quality Permits to TDEC	31	7/23/2012
Begin Construction Plans	**0**	**7/23/2012**
Complete Property Appraisals	0	7/23/2012
Begin Property Acquisition	1	7/24/2012
Submit for Construction Field Review	75	10/7/2012
Complete Property Acquisition	**0**	**10/7/2012**
Incorporate Construction Plans Per Review and Acquisition Comments	14	10/21/2012
Complete Utility Design Coordination	0	10/21/2012
Submit Final Construction Plans	**14**	11/4/2012
Advertise to Bid Contract	7	11/11/2012
Open Bid	**30**	**12/11/2012**
Issue Construction Work Order	30	1/10/2013
Hold Preconstruction Meeting	14	1/24/2013
Substantial completion Review	425	3/25/2014
Complete Construction	**30**	**4/24/2014**

NOTES:

(1) Schedule to be adjusted based on actual issue date of work order.

(2) Submit A.R.A.P. / 404 Permit / Driveway Permit, etc.

SULLIVAN ENGINEERING, INC.
317 Main Street, Suite 201
Franklin, TN 37064

April 20, 2012

Mr. Paul Holzen, P.E.
Interim Director of Engineering
109 3rd Avenue South
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From south of Falcon Crest Development
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City of Franklin, Tennessee
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         (2) Update per field observations
      ii) Initial property owner and utility owner contacts
   2) Preliminary Roadway Design Documents
      i) Modify approved curb/gutter preliminary design plans for construction of the two north bound lanes using a 3-foot shoulder design
         (1) Coordinate modifications with the Project Engineer
   3) Cross-Sections
      i) 50ft. Interval
      ii) Geotechnical data incorporated into design
   4) Issue roadway design plans for utility coordination purposes,
   5) Review design with city officials
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3) <u>Optional - Construction Administration Services</u>

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    ii) Distribute as required
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7) Review erosion features
    i) Installation

ii) Maintenance

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   i) Observe roadway and structure testing operations,
   ii) Observe quality control and installation of materials,
   iii) Field visits with written reports as required.

The following summary represents the estimated fee necessary for our design team to complete these projects:

COMPENASTATION TABLES

Engineering Design Services (Lump Sum)

SEI Design Services	
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Construction Plans	$98,720
Sub-Total SEI Design Services	***$329,070***
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Structural Analysis (Allowance for utility analysis)	$20,130
Roadway Lighting (Allowance)	$34,640
Reproduction Cost (Review Plots & PDF's by SEI all other reproduction cost by City)	$1,000
Sub-Total Consultant Design Services	***$77,280***
Total Phase Two Design Cost	***$406,350***

COMPENSATION:

This project will be developed in accordance with City of Franklin and current T.D.O.T. (English) Design Guidelines, Standard Drawings and Special Provision in the development of this project. The design fee is based on a lump sum basis and shall include all items listed within the Scope of Work, computer plotting, and travel expenses. All printing for field reviews, public meetings and construction bids shall be the Responsibility of the City of Franklin. All documents shall be computer generated in an AutoCAD format and reproduced in a Portable Document Format (PDF) suitable for printing.

Please find enclosed the following for your review and to further explain the scope of services to be performed as part of this project:

- Proposed Improvements;
- Scope of Work,
- Design and Construction Schedule

I hope this proposal meets with your approval. Please phone after you have had a chance to review this proposal or if there are any questions.

Sincerely,
Sullivan Engineering, Inc.

Paul V. Collins, Jr.
Vice President

Enclosure

PROPOSED IMPROVEMENTS

Project length 9,000+/- L.F. (includes 1,300+/-L.F. of side road)

Design development of this project will be based on preliminary design documents prepared by Sullivan Engineering, Inc. as submitted to the City of Franklin for review and acceptance in fiscal year 2007 - 2008. This project is a new alignment beginning south of the Falcon Crest Development and extending 7,700+/- l.f. south to a point of intersection with Truman Lane in the Ladd Development as noted on the City's Major Thoroughfare Plan. The city's Major Thoroughfare Plan classifies South Carothers Parkway as an urban collector street with a design speed of forty-five (45-MPH) miles per hour.

The proposed roadway template will modify the original design template of two (12'-0") basic lanes in each direction with four (4') foot bicycle lanes along each side flanked with 6-30 curb and gutters within a one hundred thirty foot (130), foot minimum right-of-way. The revised typical section shall consist of two (12'-0") basic lanes with 3-foot shoulders in each direction separated by a 30-foot median contained within a one hundred thirty foot (130), foot minimum right-of-way. Although construction/paving operations will be limited to the north bound lanes additional grading shall be performed for the future 30-foot sod median and south bound lanes. As a result of the modification to the template the original drainage design shall be re-worked and modified as necessary for special ditches to insure positive drainage. With property acquisition being completed for the original design all attempts will be made to work within existing parameters, however; additional easements may be required at various locations throughout the construction limits.

The storm drainage design shall be based on a ten year design storm frequency with all cross drains based on a fifty year design storm frequency. All storm drainage and erosion control shall be done in accordance with current water quality regulations. As part of this original design project an environmental and archeological assessment was conducted in accordance with current State of Tennessee Department of Transportation guidelines and shall be used as is within this design.

Original design documents included dual structures with multi-spans, across the Harpeth River, which later included utilities to be hung between the beams. The original design did not include the utility aspect therefore, as this was added a later date the utility loads had to be spread over both structures. Since it is proposed to construct the north bound only no changes or analysis are anticipated with this scope of services. However, should conditions change and additional utilities are to be included on the north bound structure an allowance has been established to perform a structural analysis. If load capacity is exceeded as a result of the additional utility installations the structure would require a redesign.

All front slopes shall be a 3:1 minimum extending to the clear zone. All areas disturbed during the construction of this project shall receive topsoil and sod. Temporary seeding will be used as necessary for water quality control measures as the construction process progresses. Vertical and horizontal alignments shall be designed for a 45-mile per hour design speed with emphasis placed on minimizing the impact to adjoining property owners. Horizontal and vertical design criteria shall be in accordance with approved guidelines established within the TN. Dept. of Transportation.

It is not anticipated at this time, a need for any storm water drainage system other than Class III Reinforced Concrete Pipe. However, box or slab culverts may be required for construction of the cross drain drainage system. Box or slab culverts used in the construction of this project shall be selected from standard design culverts available from the TN. Dept. of Transportation Standards.

Roadway Improvements may require the relocation of water, gas, sewer, telephone and cable TV lines. All utility relocation design shall be the responsibility of the owner or their assigned representative and

not within the scope of the proposal.

Currently no utilities exist along the proposed South Carothers Parkway corridor, however; roadway improvements of this magnitude will typically include construction of future major electrical, water, gas, sewer, telephone and cable TV lines including customer service connections. However roadway improvements at exiting local street connections may require the relocation of water, gas, sewer, telephone and cable TV lines. All utility relocation design shall be the responsibility of the owner or their assigned representative and not within the scope of the proposal.

Also, it is noted that in keeping with the City's Traffic Operation Center, a conduit for fiber optic communications cable shall be provided for future traffic signals. This provision will facilitate the City's efforts to include the corridor's traffic signals in a future traffic signal system.

STRUCTURAL ENGINEERING AND HYDRAULIC ANALYSIS SCOPE OF SERVICES
(Services for the engineering effort required for hydraulic and bridge analysis).

It is proposed to make any changes to the north bound bridge, therefore efforts will be limited to completion of the construction bid documents based on the current design.

Bridge analysis (allowance)associated with relocating all utilities from the dual bridges (north and south bound) to the original design of the northbound bridge has been included in the event all utilities are relocated. Supplemental design services (if required) for redesign of the northbound bridge will be determined at a later date if the analysis of the original structure design fails as a result of the increased loads.

Based on initial research it is not anticipated that the original hydraulic model will not require any additional submittals for approval by governing authorities. However, as a result of the design change based on construction of the southbound abutments only the water quality permits will need to be modified and resubmitted for approval.

Construction Services are not included in this proposal, however, our design teams is experienced with construction services and Construction Engineering Inspection (CEI) and can provide these services.

SCOPE OF WORK

All documents will be developed in accordance with City of Franklin and current T.D.O.T. (English) Design Guidelines, Standard Drawings and Special Provision in the development of this project. The following list is representative of documents to be generated in the development of a construction bid package.

1) **Title Sheet**
   a) Right-of-Way/Construction

2) **Typical Sections**
   a) Mainline
   b) Cross-Road
   c) Traffic Control
   d) Private Drives/Field Entrances/Business Entrances
   e) Paving Schedule
      i) Construction Documents Only

3) **Construction Details**
   a) Special Details
   b) General and Special Notes
   c) Scope of Work
   d) Itemized T.D.O.T. Standard Drawings List
   e) Itemized Construction Quantities
      i) At completion of Construction Documents

4) **Tabulated Data**
   a) Private Drives/Field Entrances/Business Entrances
   b) Erosion Control
   c) Traffic Control
   d) Roadside Ditch and Cross Drainage
   e) Paving Quantities
   f) Signing & Pavement Markings
   g) Estimated Construction Quantities

5) **Property Map**
   a) Right-of-Way Notes
   b) Acquisition Block
      i) Footnote erosion control easements.
      ii) Footnote temporary construction easements.
   c) Identify parcels impacted by construction
   d) Update property owner information

6) **Present Layout**
   a) Scale 1" = 50'
   b) Existing topographic data and boundary information
   c) Proposed Right-of-Way/Easement requirements

7) **Proposed North Bound Bridge Layout/Drainage**
   a) Scale as required
   b) Construction details as required
   c) Coordination with Government Agencies as required

8) **Proposed Layout/Drainage**
   a) Scale 1"=50'
   b) Construction details as required
   c) Permanent Pavement Markings
   d) Permanent Signing
   e) Drainage
      i) Special ditch
      ii) Storm
      iii) Cross Drainage system
      iv) Bridge layout

9) **Proposed Profiles/Drainage**
   a) Scale (1"=50'Horiz. & 1"=5'Vert.)
   b) Storm and Cross Drainage systems
   c) Existing utilities
   d) Drainage tabulation tables
   e) Hydraulic data

10) **Private Drive Entrance Profiles**
   a) Scale (1"=50'Horiz. & 1"=5'Vert.)
   b) All Drives will be surfaced in accordance with TDOT Design Guidelines
   c) Side drain requirements

11) **Culvert Sections (as required)**
   a) Reinforced concrete pipe Class III
   b) Box or slab TDOT approved culverts
   c) Hydraulic data

12) **Cross-Sections**
   a) Show proposed and future
      i) 50' Intervals
   b) Geotechnical data to be included
   c) To be included in:
      i) Right-of-Way Design Phase
      ii) Construction Design Phase

13) **Utility Information Plan**
   a) Schematic plan prepared by SEI.
      i) Schematic plan to be based on data furnished SEI by the various utility companies.

14) **Topographic Survey**
   a) Update
      i) Property owner and Utility contact information
         (1) Update per field observations
      ii) Initial property owner and utility owner contacts

15) **Drainage Map**
   a) Major basins as required

16) **Project Reviews**
   a) Right-Of-Way

b) Construction
c) As required with City Officials

17) Project Coordination and Management

a) By SEI & City of Franklin
b) Coordinate with appropriate Government agencies as required

18) Traffic Control

a) In accordance with the "Uniform Manual on Traffic Control Devices"
b) Maintain Traffic During Construction
   i) Temporary one lane Traffic during Daytime operations
   ii) Two lane Traffic during Nighttime operations
c) Per local, state and federal guidelines

19) Erosion Control

a) Per Current City of Franklin and T.D.E.C. Guidelines
b) Prepare necessary State and Federal Permits
   i) Submittal and fees by City of Franklin

20) Construction Bid Documents by SEI

a) Unit Price Bid
b) T.D.O.T. pay item units and descriptions
c) Bid documents per City format

Exclusions:

- Aerial survey
- Offsite drainage study
- Utility relocation design
- Roadway Lighting
- Water quality mitigation
- Structures (retaining walls)
- Signalization Design
- Traffic counts, analysis and projections
- Geotechnical Explorations/Paving Design
- Environmental and Erosion Control mitigation design plans
- Environmental Assessment/Document Review
- Air and Noise Environmental Assessment
- Remediation of karsts features

CONSTRUCTION AND DESIGN SCHEDULE

South Carothers Parkway Project length 9,000+/- L.F. (1,300+/-L.F. of side road) TASK	DAYS TO COMPLETION	DATE OF COMPLETION
Issue work order (1)		6/1/2012
Begin Survey	3	6/4/2012
Preliminary Survey Due	14	6/18/2012
Begin Preliminary Design	-17	6/1/2012
Review preliminary Design with City Officials	**60**	**7/31/2012**
Advertise for Design Public Hearing (N/A)	0	7/31/2012
Hold Design Public Meeting (N/A)	0	7/31/2012
Receive Design Public Meeting Comments (N/A)	0	7/31/2012
Finish Survey	3	8/3/2012
Begin Utility Design Coordination	-3	7/31/2012
Finish Preliminary Design (N/A)	30	8/30/2012
Begin Right-of-Way Design (2)	**0**	**8/30/2012**
Begin Water Quality Permit Process	0	8/30/2012
Submit for Right-of-Way Field Review	45	10/14/2012
Hold Right-of-Way Field Review	5	10/19/2012
Finish Final Right-of-Way Plans	**14**	**11/2/2012**
Begin Property Appraisals	-31	10/2/2012
Submit Water Quality Permits to TDEC	31	11/2/2012
Begin Construction Plans	**0**	**11/2/2012**
Complete Property Appraisals	0	11/2/2012
Begin Property Acquisition	1	11/3/2012
Submit for Construction Field Review	90	2/1/2013
Complete Property Acquisition	**0**	**2/1/2013**
Incorporate Construction Plans Per Review and Acquisition Comments	21	2/22/2013
Complete Utility Design Coordination	0	2/22/2013
Submit Final Construction Plans	**14**	3/8/2013
Advertise to Bid Contract	7	3/15/2013
Open Bid	**30**	**4/14/2013**
Issue Construction Work Order	30	5/14/2013
Hold Preconstruction Meeting	14	5/28/2013
Substantial completion Review	425	7/27/2014
Complete Construction	**30**	**8/26/2014**

NOTES:

(1) Schedule to be adjusted based on actual issue date of work order.

(2) Submit A.R.A.P. / 404 Permit / Driveway Permit, etc.