BARGE DESIGN SOLUTIONS, INC.

PROFESSIONAL SERVICES AGREEMENT

This agreement is made as of date last signed below by and between City of Mt. Juliet, Tennessee (**Client**) and Barge Design Solutions, Inc. (**BARGE**) for professional services for the assignment described as follows:

Project: Pleasant Grove Widening

Location: Mt. Juliet, Tennessee

Description of Project:

Project limits are from Central Pike to Old Pleasant Grove Road. Secondary minor project is to provide a separate set of plans for approximately 1000' of Pleasant Grove Road for use by a private developer to construct half of the roadway in front of their development.

I. PROFESSIONAL SERVICES: BARGE agrees to perform the following Basic Services under this contract: See Attachment A – Scope of Services

II. COMPENSATION: Client shall compensate BARGE for the Basic Services as follows:

See Attachment A, page 12 – Fee Summary Table

III. PAYMENTS: Invoices for services rendered will be issued monthly, and payment is due upon receipt of each invoice. Unless special arrangements are made, a finance charge of 1.5% per month will be added to unpaid balances more than thirty (30) days old.

IV. TIME: Unless agreed otherwise in writing, **BARGE** will commence its services within a reasonable time after receipt of an executed copy of this Agreement. **BARGE** will perform its services in a timely manner commensurate with the exercise of due professional care. Time for performance shall be extended as necessary for delays or suspensions due to circumstances beyond **BARGE**'s control. If such delay or suspension extends more than six months (cumulatively), **BARGE**'s compensation shall be equitably adjusted.

V. SUSPENSION OF SERVICES: If **Client** fails to pay any invoice when due or otherwise is in material breach of this Agreement, **BARGE** may at its sole discretion suspend performance of services upon five (5) days' written notice to **Client**. **BARGE** shall have no liability to **Client**, and **Client** agrees to make no claim for any delay or damage as a result of such suspension. Upon cure of the cause of the suspension, **BARGE** shall resume services within a reasonable time, and there shall be an equitable adjustment of the project schedule and fees to reflect the effects of such suspension.

VI. STANDARD OF CARE: Notwithstanding any other provision of this Agreement or any other document describing the services, **BARGE** shall perform its services in accordance with the standard of professional care ordinarily exercised under similar circumstances by reputable members of its profession in the same locality at the time the services are provided. No warranty, expressed or implied, is made or intended by **BARGE**. The parties further agree that **BARGE** is not a fiduciary of **Client**.

VII. TERMINATION: The obligation to provide further services under this Agreement may be terminated without cause by **Client** upon ten (10) days' written notice to **BARGE**. On termination ,

Client shall pay **BARGE** all amounts due for any services performed to the date of termination (plus all reimbursable expenses incurred). Upon such termination by **Client**, it may retain all drawings, reports, documents, and other instruments of professional services prepared by **BARGE** up to date of termination.

VIII. OWNERSHIP AND REUSE OF DOCUMENTS: All documents, including without limitation, drawings, specifications, and reports prepared by **BARGE** pursuant to this Agreement are instruments of professional service. **Client** shall own all legal and equitable rights therein, including copyrights, but **BARGE** will have a license to use such instruments. Such instruments are not intended or represented to be suitable for reuse by **Client** or others for additions or modifications of the Project or on any other project. Any reuse without written consent of **BARGE** shall be at **Client's** sole risk and without liability to **BARGE**. **BARGE** shall be entitled to further compensation for services it is requested to perform in connection with any reuse of its instruments of professional service.

IX. ACCESS TO THE SITE/JOBSITE SAFETY: Unless otherwise stated, **BARGE** will have access to the site for activities necessary for the performance of its services. **Client** agrees that **BARGE** shall have no responsibility for the means, methods, sequences, procedures, techniques, and scheduling of construction, as these decisions are solely the responsibility of the contractors. **BARGE** further shall have no authority or duty to supervise the construction workforce and shall not be responsible for jobsite safety or for any losses or injuries that occur at the Project site.

X. **INSURANCE: BARGE** shall secure and maintain insurance in the following minimum amounts:

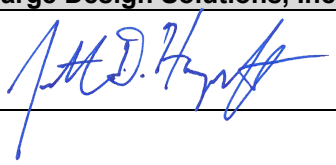
Worker's Compensation	Statutory
Employer's Liability	$500,000
Commercial General Liability	$1,000,000 per occurrence and in the aggregate
Automobile Liability	$1,000,000 per occurrence and in the aggregate
Professional Liability	$1,000,000 per claim and in the aggregate

BARGE shall provide a Certificate of Insurance naming the **Client** as an additional insured before commencing the work.

XI. **DISPUTE RESOLUTION:** It is agreed that all claims, disputes, or other matters in question arising out of or related to this Agreement shall be submitted to nonbinding mediation before any legal proceeding is commenced. The parties shall equally bear the fees and expenses charged by the mediator. Venue for any exercise of rights at law will be a court of competent jurisdiction in Wilson County, Tennessee. In the event of any litigation or disputes regarding this Agreement, the prevailing party or parties shall be entitled to recover reasonable attorneys' fees and all costs at all trial and appellate levels and in any mediation.

XII. **OPINIONS OF CONSTRUCTION COST:** Any opinion of probable construction cost prepared by **BARGE** represents the judgment of one or more **BARGE** design professionals and is supplied for general guidance of **Client**. Since **BARGE** has no control over the construction marketplace and does not use the same pricing methods used by contractors, **BARGE** does not guarantee the accuracy of such opinions.

XIII. **GOVERNING LAW:** Unless otherwise specified within this Agreement, this Agreement shall be governed by the laws of the State of Tennessee.

City of Mt. Juliet, Tennessee	Barge Design Solutions, Inc.
By:	By: 
Printed Name:	Printed Name: Jonathan Haycraft, PE
Title:	Title: Sr. Vice President
Address:	Address: 615 3rd Avenue South, Suite 700 Nashville, TN 37210
Date Signed:	Date Signed: 12/14/2023
Tax I.D. Number:	

The scope of work is presented in the following elements.

I. Project Description
II. Scope of Services
III. Additional Services
IV. Project Understanding, Assumptions, and Exclusions
V. Time of Performance
VI. City Responsibilities
VII. Deliverables
VIII. Compensation

I. Project Description

Barge Design Solutions, Inc. (Barge) is proposing to provide design services for the widening of Pleasant Grove Road (TDOT PIN 132387.00) for the City of Mt. Juliet, Tennessee (City). The goal of the project is to widen and realign Pleasant Grove Road from Central Pike (SR 265) to Old Pleasant Grove Road. Previous efforts performed on this project (by others) for the City include:

- Techincal Report/Alternatives Analysis
- Topographic and property survey
- Stakeholder engagement
- Development of design concepts
- Initiation of NEPA activities

This Scope of Work includes development and completion of the NEPA environmental documentation, geotechnical investigations, progressing the early design concepts to Preliminary design, development of abbreviated construction plans for use by a private developer, Preliminary Plans, and Right of Way (ROW) Plans.

ROW acquisition services, final construction plans, specifications, permits, and contract documents are additional services which will be included in future amendments to this agreement.

II. Scope of Services

Barge proposes the following Scope of Services related to the above-noted items.

Task 1 - Project Management

This task will consist of general project management, administrative, and accounting activities for the project. The Project Manager will serve as the main point of contact between the City and Barge to ensure that information is distributed to the appropriate team members and assigned staff. Regular meetings/teleconferences will be held between the City, Barge, and other associated stakeholders. A project schedule and payout curve will be developed for approval by the City. Barge's Project Manager will be a local point of contact who will facilitate communication between the City, Barge, and associated stakeholders. This task includes project kickoff meeting, regular progress meetings, meeting agendas and minutes, and regular invoicing.

Task 2 – NEPA

Given the nature of the project, the National Environmental Policy Act (NEPA) document is a likely candidate for classification as a D-List Categorical Exclusion (D-List CE). This determination can only be made, however, by the Tennessee Department of Transportation (TDOT) in cooperation with the Federal Highway Administration (FHWA). If another level of NEPA document is required by TDOT and/or FHWA other than the preparation of a D-List CE, this effort will be considered Additional Services beyond this scope of services.

One Build Alternative and the No-Build Alternative will be studied. The NEPA document will be based on functional plans or on preliminary plans (20-30 percent complete) as defined on Page 4-5 of TDOT's Local Government Guidelines for the Management of Federal and State-Funded Transportation Projects (March 2018).

Task 2A – TDOT Environmental Division Coordination

The Barge team will maintain direct contact and function as a liaison with the designated representative of the TDOT Environmental Division's Local Programs Office.

Task 2B – Agency Coordination

The Barge team will prepare and send initial studies coordination letters as well as associated project mapping and plans to TDOT for coordination with the following federal and state agencies:

- U.S. Fish and Wildlife Service (USFWS)
- Tennessee Wildlife Resources Agency (TWRA)
- Tennessee Department of Environment and Conservation (TDEC)
- Tennessee State Historic Preservation Office (TN-SHPO)

Task 2C – Environmental Technical Studies

The Barge team will prepare the environmental technical studies listed below:

Ecology

Jurisdictional Waters Determination

The Barge team will provide an Environmental Boundaries Report (EBR) in accordance with TDOT standards. As part of the preparation of the EBR, we will perform a jurisdictional waters determination as outlined below.

The Barge team will provide a Waters of the U.S. Determination (i.e. streams and wetlands) for the project area. In performing the jurisdictional determinations, the 1987 Corps of Engineers Wetlands Delineation Manual and the 2012 Regional Supplement: Eastern Mountains and Piedmont Region, Version 2.0, will be followed to establish a description of the soils, plants, and hydrologic conditions of the project area. The Barge team will perform the following tasks:

1. Using the 1987 Corps of Engineers Wetland Delineation Manual and the 2012 Regional Supplement: Eastern Mountains and Piedmont Region, Version 2.0 delineate potential wetlands located in the project site.
2. Complete the Corps of Engineers Wetland Data Forms for each wetland/upland sampling site.
3. Using a Trimble® GeoXT GPS Unit, map the wetland boundaries (if present) to determine area and log lat/long of each soil pit along with hue, value, and chroma of the soil using a standard Munsell® Color Chart.
4. Submit wet weather conveyance and stream determinations as a Qualified Hydrologic Professional to TDEC.

5. Prepare a summary report describing the findings that includes water resources form, the routine wetland determination data forms, Hydrologic Determination forms, Habitat Assessment forms, Tennessee rapid assessment methodology forms, a photo summary, and delineation map.

Bat Survey

The Barge team will complete a bat survey for the presence/probable absence of the endangered Indiana bat (Myotis sodalis), northern long-eared bat (Myotis septentrionalis), and proposed endangered tricolored bat (Perimyotis subflavus). The Barge team will perform the following tasks:

- Mist Net Survey: The Barge team will prepare a formal study plan and submit it to the USFWS to finalize the mist net survey effort, locations, and protocols as required by the Federal Scientific Collecting Permit. The Barge team will follow guidelines and technical criteria outlined in the USFWS agency document titled 2023 Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines, dated Mach 2023. The Barge team assumes that the USFWS will concur with two net sites with sixteen total net-nights of sampling; however, future consultation with the USFWS or significant changes in the project may deem additional survey efforts necessary. If the USFWS requires additional survey efforts, this can be completed as part of the Additional Services clause of this agreement.
- Radio Tracking (If Required): If Indiana, northern long-eared, and/or tricolored bats are captured in the project area, The Barge team will attach transmitters and conduct a telemetry survey and emergence counts per the 2023 Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidance. The Barge team will provide the field datasheets, photos, and any other data collected during the survey necessary to compile a final report.

Floodplains

Floodplains and floodways in the project area will be identified only through the review of National Flood Insurance Rate Maps (FIRMs). All FIRMs specific to the project area will be compiled and the relevant floodplains and floodways information will be provided as part of the NEPA document.

Section 4(f) and Section 6(f) – Recreational Resources

It is not anticipated that the proposed project will require any right-of-way or easements from a Section 4(f) recreational resource or from a resource funded by Land and Water Conservation Funds (Section 6(f)). If a Section 4(f) or Section 6(f) evaluation is deemed necessary by TDOT or any other agency, these services can be provided by the Consultant in accordance with Additional Services clause of this agreement.

Cultural Resources

Section 106 – Historic Preservation

Given the proposed project area includes 15-20 resources more than 50 years of age, The Barge team will be responsible for preparing a Section 106 Historic Architecture Resources Survey to document and evaluate potential project effects to all National Register of Historic Places (NRHP)-listed and NRHP-eligible historic architecture resources in the area of potential effect (APE) per the criteria of adverse effects set forth in Section 106 regulations. Additionally, measures to avoid, minimize, or mitigate unavoidable adverse effects will be evaluated.

The Barge team will complete a Section 106 Assessment report pursuant to TDOT's template and once the Section 106 Historic Architecture Resources Survey is completed, the draft report and the Section 106 Assessment report will be submitted to TDOT for review and comment. TDOT will submit these reports to the TN-SHPO for review. Following the receipt of comments, Barge will finalize the Section 106 Historic Architecture Resources Survey, and the results will be incorporated directly into the NEPA document.

Section 106 – Archaeology
Due to the presence of undisturbed areas within portions of the project limits, the Consultant's subconsultant, RGA, will be responsible for conducting a Phase I Archaeological Survey to identify historic and prehistoric archaeological sites within the project's anticipated APE. The results of the Phase I Archaeological Survey will be presented in a report that meets the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (1983) and complies with the Tennessee SHPO Standards and Guidelines for Archaeological Resource Management Studies (October 2018) and the TDOT Phase I Archaeological Survey Scope of Work (2021), if applicable.

This work will be performed pursuant to Section 106 of the National Historic Preservation Act (NHPA), as amended.

Once the Phase I Archaeological Survey is complete, the draft report will be submitted to TDOT for review and comment. TDOT will submit the draft report to the TN-SHPO for review. Following the receipt of comments, RGA will finalize the Phase I Archaeological Survey, and the results will be incorporated directly into the NEPA document.

Hazardous Materials

The Barge team will complete a desktop review of available hazardous materials databases available through TDEC and the Environmental Protection Agency (EPA) to determine whether the proposed project area has the potential to contain hazardous materials that may be impacted by the project. This information along with all relevant TDEC and EPA database mapping for the project area will be incorporated into Agency Coordination documentation for the TDOT Hazardous Materials Section to review and provide further recommendations as to whether additional studies may be necessary.

Environmental Justice

The Consultant will complete an Environmental Justice (EJ) analysis, in conformance with Executive Order 12898 and FHWA Order 6640.23 (December 2, 1998). The analysis will evaluate block group-level census data within the project area to determine whether minority and/or low-income populations are present in the area. If present, those populations will be evaluated to determine if they are affected by the proposed project, and if so whether there may be disproportionately high and adverse human health or environmental effects on minority and low-income populations. The EJ analysis will be limited to desktop research only and will be incorporated directly into the NEPA document. No fieldwork will be completed. If a disproportionately high and adverse effect on a minority population or a low-income population is revealed, the analysis will show how the effects are distributed within the affected project area. If potential mitigation measures or potential community outreach efforts are identified by TDOT or FHWA, these services can be provided, but will be considered Additional Services beyond this scope of services.

Air Quality and Noise

- Air Quality Evaluation
  The Consultant's subconsultant, Bowlby & Associates, Inc. (B&A), will conduct a conformity evaluation per current regulations based on the current air quality designations for Wilson County. Additionally, B&A will develop the air quality statements for inclusion in the NEPA document.

- Noise Evaluation
  Given the proposed project includes the widening of Pleasant Grove Road to provide additional capacity, the Consultant's subconsultant, B&A, will be responsible for preparing a Noise Technical Report. As part of the Noise Technical Report, B&A will perform the following tasks:

    1. Data Collection: B&A will review the project plans, traffic counts, and planning reports developed for the project. Elevations will be determined using data from the state GIS repository.
    2. Identification of Noise-Sensitive Land Uses: B&A will review the project plans and available aerial photography to identify the noise-sensitive land uses to be studied.
    3. Determination of Existing Noise Levels: B&A will use Method 1: Measurement of Existing Noise Levels of TDOT's noise procedures to determine existing noise levels.
    4. Prediction of Future Noise Levels: Future design year noise levels for the No-Build Alternative will be determined by evaluating existing and design year traffic volumes on the surrounding roadway network. B&A will predict future design year worst-hour noise levels using TNM 2.5 for the Build Alternative using the plans to be submitted with the NEPA document.
    5. Determination of Noise Impacts: B&A will identify noise impacts at the noise-sensitive land uses per TDOT's noise policy. Locations will be impacted if: 1) the predicted worst hour Leq (1h) approaches or exceeds the FHWA Noise Abatement Criteria (NAC), or 2) the project causes a substantial increase in existing noise levels.
    6. Noise Abatement Evaluation: B&A will complete a noise abatement evaluation for the Groves Reserve subdivision. Noise barriers for other areas will not be feasible due to driveway access.
    7. Report Preparation: B&A will prepare a Noise Technical Report for the project per TDOT's procedures as well as a summary for the NEPA document. The report will include brief discussions of construction noise and information for local officials. B&A will also prepare a Google Earth kmz file using TDOT's standard schema that includes the noise study results.

Environmental Technical Information to be provided by TDOT

The TDOT Environmental Division will be responsible for providing the following environmental technical information:

- Native American Consultation

Following receipt of the above listed environmental technical information from the TDOT Environmental Division, Barge will review and incorporate the information/data into the NEPA document.

Task 2E – Documentation Preparation and Approval
The purpose of this task is to develop the CE documentation, consistent with the requirements of the FHWA guidance as outlined in FHWA Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents as well as the Tennessee Environmental Procedures Manual (June 2011 edition) and TDOT's Local Government Guidelines for the Management of Federal and State-Funded Transportation Projects (March 2018).

Following completion of the document by Barge, the NEPA document will be submitted to the City for review and comment. Barge will then revise the NEPA document based on the City's comments. Once the City approves the NEPA document, the document will be submitted to the TDOT Environmental Division/FHWA for initial review and subsequent approval.

Deliverables:

1. Initial Studies Coordination Package (electronic copy in Adobe PDF format)
2. Section 106 Assessment (electronic copy in Adobe PDF format)
3. Environmental Boundaries Report (electronic copy in Adobe PDF format)
4. Bat Mist Net Survey (electronic copy in Adobe PDF format)
5. Historic Architecture Resources Survey (electronic copy in Adobe PDF format)
6. Phase I Archaeological Survey (electronic copy in Adobe PDF format)
7. Air Quality Conformity Evaluation (electronic copy in Adobe PDF format)
8. Noise Technical Report (electronic copy in Adobe PDF format)
9. Environmental Justice Memorandum (electronic copy in Adobe PDF format)
10. Draft Categorical Exclusion document for the City's review (electronic copy in Adobe PDF format)
11. Draft Categorical Exclusion document for TDOT/FHWA review (electronic copy in Adobe PDF format)
12. Final Categorical Exclusion document for TDOT/FHWA review and approval (electronic copy in Adobe PDF format)

Task 3 – Developer Construction Plans
The purpose of this task is to prepare Final Construction Plans for use by the developer of the tract at the southwest corner of Old Pleasant Grove Road and Pleasant Grove Road. The design and plans production was initiated by a previous consultant. Assumptions are:

- The City will provide Barge all files related to this design and for use by Barge.
- The previous design was sound and completed to a point where Barge can perform a cursory review to further, and complete, the design to produce the final plans

Design is to be developed for the southern half of the new Pleasant Grove Road, from approximately 1,000' west of Old Pleasant Grove Road to Old Pleasant Grove Road. The design is to be compatible with both the existing roadway as well as the future Pleasant Grove Road widening project. Abbreviated plans will be prepared for the developer's use. Developer will obtain all necessary permits and construct the widening privately. Plans shall be prepared in compliance with TDOT's roadway design standards and criteria. Barge will prepare a set of plans which include:

- Title Sheet
- Index and Standard Drawings
- Quantities Sheet
- Typical sections
- Tabulated Quantities sheet
- Present layout sheets

- Proposed layout sheets
- Profile sheets
- Cross Section sheets
- Striping and signing plans

Barge's responsibilities include coordinating with the developer through design, submitting Draft Final plans to the City for review, addressing comments, and submitting Final Plans for developer's use. Barge's responsibilities specifically exclude utility coordination, bid documents, bidding assistance, construction assistance, permitting, and survey staking.

Task 4 – Survey Update Services

This Task includes updating the current survey data to reflect any changes since the original topographic and property survey. Barge anticipates a minimum of two locations where an updated survey may be required prior to the project progressing to ROW acquisition, Tract 6, Shiloh Baptist Church property and Tract 33, the Imagine1 redevelopment. Survey update shall include new featues, such as:

- Edge of shoulder, edge of pavement, driveways, buildings, breaklines
- Septic tanks, field lines
- Drainage structures
- Fence lines
- Handicap ramps and sidewalks
- Survey tasks related to geotechnical work including:
    - Survey of boring and asphalt cores (36 locations):
    - 22 boring locations, 10 pavement core locations along Pleasant Grove, and 4 total on the side roads
- Deliverables will be prepared in Microstation and Geopak
- Survey to be datum adjusted and tied to the TDOT Central Pike Interchange project

Property Owner contact includes:

- Contact property owner and/or occupants and deliver letter describing the project and purpose of the survey prior to beginning work on the project. If the owners are not occupants, send certified letter to the owner.
- Discuss property lines/comers, field lines, septic tanks, underground tanks, wells, and other unusual features with the owner. Record conversation with property owner, record on contact form and make sketch of septic tank, field lines, wells, property comers, and other features. Flag existing property corners and ROW monuments

Task 5 – Geotechnical Services

This task will consist of exploration of the subsurface soil conditions and pavement conditions within the planned roadway improvement areas. A detailed description of the work and fee breakdown are provided in Attachment B.

Task 6 – Utility Coordination

This task will consist of working with utility owners to identify conflicts and to establish relocation requirements. During this task, Barge will:

- Make initial contact with utility owners to identify/verify location and service information.
- Prepare notices and agenda for utility coordination meeting.
- Lead one utility coordination meeting at Final Preliminary Plans.
- Identify and help to resolve potential utility conflicts.

- Prepare and distribute utility coordination meeting minutes.
- Begin preparation of the Utility Certification package up to final ROW plans. Final Utility Certification package to be prepared and delivered to TDOT Local Programs as Additional Services once ROW phase has received Notice to Proceed.

Task 7 – Preliminary Plans

Preliminary Plans shall be developed in compliance with the Tennessee Department of Transportation's Design Guidelines, the Local Government Guidelines Manual, and TDOT's roadway design standards and criteria. Initially, Preliminary Plans will be developed only to the extent required to support the NEPA document. After the design notice to proceed is issued, final Preliminary Plans will be delivered in compliance with TDOT's Preliminary Plans Submittal checklist. Other activities included in this task include:

- Addressing review comments provided by TDOT and the City.
- Preparation of preliminary estimated roadway quantities.
- Preparation of Opinion of Probable Construction Cost (OPCC) based on the estimated quantities and latest TDOT unit cost reports.

Design and early plans production were initiated by a previous consultant. Assumptions:

- The City will provide Barge all files related to this design and for use by Barge.
- The previous design was sound and completed to a point where Barge can perform a cursory review to further, and complete, the design to produce the plans.

Task 7A – Traffic Analysis

Existing Conditions and Data Collection

- Barge intends on utilizing the previously obtained turning movement traffic counts (TMC) collected during peak hours at the following intersections:
  - Pleasant Grove Road at Old Pleasant Grove Road
  - Pleasant Grove Road at Triple Crown Parkway / Burton Place
  - Pleasant Grove Road at Central Pike

- Review Tennessee Department of Transportation (TDOT) historical count data
  - Review growth rate using TDOT Count data for Design Year
  - Review Design Year traffic volumes for three study intersections

Operational Analysis (Synchro 11 software will be used for intersection modeling and HCM analysis of signalized and stop controlled intersections, and Sidra will be used for roundabout analysis.)

- Analyze traffic volumes for AM&PM peak hour for existing conditions of the three study intersections listed below:
  - Pleasant Grove Road at Old Pleasant Grove Road
  - Pleasant Grove Road at Triple Crown Parkway / Burton Place
  - Pleasant Grove Road at Central Pike
- Analyze No-build conditions for AM&PM peak hours using the Design Year volumes
- Analyze Build conditions for AM&PM peak hour using the Design Year Volumes and existing traffic control
- Analyze Build conditions for AM&PM peak hour using the Design Year Volumes and the following traffic control:
  - Pleasant Grove Road at Old Pleasant Grove Road - signalized
  - Pleasant Grove Road at Triple Crown Parkway / Burton Place - RAB
  - Pleasant Grove Road at Central Pike – stop controlled

Deliverables:

- Barge will provide a traffic memo summarizing the traffic operation analysis outlined above and will submit the analysis to the City
- If requested, Barge will submit the traffic memo to TDOT

Task 7B – Traffic Design

Utilizing the base survey provided by the City, Barge will prepare plans for the traffic signal layout at the intersection Old Pleasant Grove Road at Pleasant Grove Road. Barge will conduct a site review prior to the signal design to identify utility issues overhead and underground and locate signal poles and traffic signal cabinet. The design elements required as part of the plan set include locating signal poles, determining mast arm lengths, determining signal head locations, locating traffic controller cabinet, detection, conduit and pull boxes placement, and traffic signal cable routing. Pedestrian signals with appropriate pushbuttons and signage will be part of the design along with pedestrian ramps and sidewalk upgrades. Additional signs and pavement markings will be included on all approaches to the intersection.

Signal Plans will include standard drawings, signal notes, estimated quantities, signal layout, and signal details. Design tasks include:

Traffic Signal Design

- Plan sheet preparation
- Base Sheet Layout/Update
- Field Site Review
- Review utility locations and issues
- Identify service point drop.
- Overhead utility locations and identify issues.
- Identify underground utilities issues (i.e. Water, Gas)
- Prepare ROW plans Signal plan set:
    - Signal pole placement and data tables
    - Controller cabinet placement
    - Signal head and Cabling design
    - Phasing diagrams
    - Detection layout and assignments
    - Conduit/pull box layout.
    - Intersection Sign and Markings Per MUTCD requirements
    - Street name and regulatory signage layout
    - Stop bar, channelization striping, lineage striping, turn lane arrows, layout verification
    - Communication design for connection to existing infrastructure as needed
    - Quantities
- ROW Plans review
    - Barge will update plans per City's comments.
- Final Signal plans will be authorized under Additional Services at a future date.

Barge will coordinate with TDOT throughout the design to obtain proper approvals of the signal design.

Deliverables:

- Field Review Meeting Minutes
- 60% Traffic Signal Plan Set (PDF)

Task 8 – ROW Plans

ROW Plans shall be developed in compliance with Tennessee Department of Transportation's Design Guidelines, the Local Government Guidelines Manual, and TDOT's roadway design standards and criteria. Upon Notice to Proceed, ROW Plans will be developed in accordance with TDOT's ROW Plans Submittal checklist. Other activities included in this Task include:

- Quality review to check design, constructability, and drafting of the plans.
- Addressing review comments provided by TDOT.
- Update of estimated roadway quantities.
- Prepare OPCC based on estimated quantities and latest TDOT unit cost reports.

III. Additional Services

Barge expects that some additional work may need to be completed above and beyond what is listed in the tasks outlined in Section II. Notable additional services are provided below.

- Environmental Technical Studies
    - Public Involvement Activities
    - Conceptual Stage Relocation Plan
    - Detailed Floodplain Analysis
    - Farmland Coordination and Farmland Analysis
    - Section 4(f) and Section 6(f) Documentation
    - Phase II Archaeological Survey and Phase III Testing
    - Phase I or Phase II Environmental Site Assessments and Asbestos Containing Materials Surveys
    - Detailed Environmental Justice Analysis
    - Title Searches
    - Additional coordination with TDOT and/or the Tennessee State Historic Preservation Office (TN-SHPO) or if additional historic architecture documentation is needed past the preparation of the Section 106 Historic Architecture Resources Survey previously mentioned.
    - Archaeology
        - Phase II Testing
        - Memorandum of Agreement to confirm agreed upon mitigation measures for the Build Alternative.
        - Phase III work, data recovery.
    - Hazardous Materials
        - It is assumed that no Phase I Environmental Site Assessment (ESA), Phase II ESA, or Asbestos Containing Materials (ACM) surveys will be conducted as part of this proposed scope of services.
- Permitting
- Legal Descriptions and ROW Exhibits
- ROW Acquisition Services
    - Appraisals, Appraisal Review, Negotiations, Acquisition Management
    - Proposed ROW and easement staking
- ROW Public Meeting
- Construction Plans Development
- Landscape Architecture
- Final Signal Plans
- Lighting
- Preparation of Bid Documents
- Construction Administration
- Construction Support Services

IV. Project Understandings and Assumptions

Barge will provide the above-noted services based upon a given set of assumptions. These assumptions are as follows:

1. Barge will have access to the site and adjoining areas, as required.
2. Permit, recording fees, etc., are to be paid by the City.
3. Two sets of plans will be produced: Developer Plans, and Pleasant Grove Road.
4. One set of Preliminary and Final ROW Plans will be produced.
5. Electrical service, internet, gas, sanitary sewer, water, and communication services utility services will be designed by others.
6. Schedule is dependent upon the timely receipt of critical information and timely response from TDOT, FHWA, and other regulatory agencies.
7. Any easements for utilities or other site requirements are assumed by others.

In providing an Opinion of Probable Construction Cost (OPCC), the City understands that Barge has no control over the cost or availability of labor, equipment materials, over-market conditions, or the Contractor's method of pricing, and that Barge's OPCC are made on the basis of Barge's professional judgment and experience. Barge makes no warranty, express or implied, that the bids or the negotiated cost of the work will not vary from Barge's OPCC.

V. Time of Performance

Barge is prepared to begin work within two (2) weeks upon receipt of a signed professional services agreement or written authorization to proceed. For planning purposes, Barge has prepared a preliminary schedule for the project, provided as Attachment C. Barge and City are aware that many factors outside Barge's control may affect Barge's ability to complete the services to be provided under this Agreement. Barge will perform these services with reasonable diligence and expediency, consistent with sound professional practices.

VI. City Responsibilities

Barge strives to work closely with our clients. In order for the project team to function efficiently, certain information is needed to be provided by the City and other interested stakeholders in a timely manner. These items and responsibilities are noted below.

A. Provide information as required to support development of Barge's scope, as required in the project agreement for services.
B. Provide review comments in a timely manner.
C. Provide single point of contact for project coordination purposes.
D. Coordination of public meetings, including public announcements/invitations, providing meeting space, public information, and associated expenses will be provided by City.

VII. Deliverables

Several deliverables will be produced as part of the basic professional services. The following is a list of documents that will be produced as a part of this effort.

A. NEPA Document and associated Environmental Studies
B. Final Developer Construction Plans
C. Survey Update
D. Geotechnical Report
E. Draft utility Coordination Document
F. Preliminary Plans
G. ROW Plans

VIII. Compensation

The compensation to be paid to Barge for providing requested services is provided in the Fee Summary Table below.

Fee Summary Table

Items	Fee Type	Fee Amount
Task 1: Project Management	Lump Sum	**$62,222**
Task 2: NEPA	Lump Sum	**$118,373**
Air and Noise Subconsultant	Included in Task 2	$13,387
Ecology Subconsultant	Included in Task 2	$38,350
Cultural Resources Subconsultant	Included in Task 2	$27,186
Task 3: Developer Construction Plans	Lump Sum	**$76,198**
Task 4: Survey Update Services	Lump Sum	**$7,947**
Task 5: Geotechnical Services	Lump Sum	**$38,000**
Task 6: Utility Coordination	Lump Sum	**$6,632**
Task 7: Preliminary Plans	Lump Sum	**$203,462**
Task 8: ROW Plans	Lump Sum	**$185,206**
TOTAL	**LS**	**$698,040**

The fees provided above are valid up to three (3) months from the date of this proposal.

Exhibit A – Project Understanding

Our Scope of Services is based on our understanding of the project as described by Barge and the expected subsurface conditions as described below. We have not visited the project site to confirm the information provided. Aspects of the project, undefined or assumed, are highlighted as shown below. We request Barge and/or the design team verify all information prior to our initiation of field exploration activities.

Planned Construction

Item	Description
Information Provided	Information provided by email communications between Mr. Rast of Barge to Mr. John Agee and Mr. Eric Conway of Terracon. An in-person meeting with the City of Mt. Juliet and Barge was attended by Mr. Conway on October 17, 2023. Information provided included a planned realignment and widening of Pleasant Grove Road in Mt. Juliet.
Project Description	The total project will include the realignment and widening of Pleasant Grove Road. A new round about is planned at the intersection of Pleasant Grove Road and Triple Crown Pkwy. The total project length is approximately 8,400 linear feet.
Grading/Slopes	Up to 5 feet of cut/fill may be required to develop final grades.
Below-Grade Structures	None planned at this time but depending on final design some box culverts may be constructed.
Free-Standing Retaining Walls	None anticipated at this time
Pavements	Flexible Pavement Design and construction based on the City of Mt. Juliet's standard pavement section. Detailed pavement design is not a part of our scope of services. We have not been provided with traffic loading information at this time.

Site Location and Anticipated Conditions

Item	Description
Parcel Information	The project is located starting at approximately the intersection of Pleasant Grove Road and Old Pleasant Grove Road and continuing west, then south approximately 8,400 linear feet, ending at Central Pike. The project is in Mt. Juliet, Tennessee. (See Exhibit D)
Existing Improvements	Existing Asphalt Road Farmland/agricultural use
Current Ground Cover	Asphalt pavement Grassy with Mature trees along alignment
Existing Topography	Existing roadway grades vary from approximately 585 to 680 feet. Grades along the new alignment and widening are similar to the existing roadway grades.
Site Access	We expect the site, and all exploration locations, are accessible with our track/ATV-mounted drilling equipment and support vehicles. We understand that the current landowners are aware of the project and the ROW access has been confirmed. We will coordinate with Barge and existing landowners prior to entering any property. Hand clearing of small trees and brush may be required for boring location access. Borings will be offset within tolerable distances to readily accessible areas of the alignment. Clearing access for boring locations is not included in our scope of services.
Expected Subsurface Conditions	Our experience near the vicinity of the proposed development and review of geologic maps indicates subsurface conditions generally consist of 10 to 15 feet of lean clay overlying limestone bedrock. Some fill may also be present at the site due to historical grading.

Exhibit B - Scope of Services

Our proposed Scope of Services consists of field exploration, laboratory testing, and engineering/project delivery. These services are described in the following sections.

Field Exploration

Based on input provided by Barge, and our experience with similar projects in the vicinity of the project site, we propose the following field exploration program which is anticipated to be completed within 1 to 2 weeks of on-site activities.

Number of Exploration Points	Planned Exploration Depth (feet) [1]	Planned Location [2]
22	10 – 20	Roadway Alignment
14	5	Existing Pavement Cores and Drilling

1. Borings would be terminated at shallower depths if refusal is encountered.
2. The planned boring locations will be determined when the alignment and cross sections are provided to us.

Boring Layout and Elevations: We will use handheld GPS equipment to locate borings with an estimated horizontal accuracy of +/-20 feet. Field measurements from existing site features may be utilized. If available, approximate elevations will be obtained by interpolation from a site specific, surveyed topographic map or most recent Google Earth TM or GIS imagery to assist in determining site elevations. We can alternatively coordinate with your Project Surveyor to include locations and surface elevations in project information if so requested. Regardless of the methods used, Terracon is not a licensed surveyor so these should be considered approximate unless survey control is necessary/performed.

Subsurface Exploration Procedures: We will advance borings with a track/ATV-mounted drill rig using continuous flight augers (solid stem and/or hollow stem, as necessary, depending on soil conditions). Four samples will be obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. Soil sampling is typically performed using thin-wall tube and/or split-barrel sampling procedures. The split-barrel samplers are driven in accordance with the standard penetration test (SPT). The samples will be placed in appropriate containers, taken to our soil laboratory for testing, and classified by a Geotechnical Engineer. In addition, we will observe and record groundwater levels during drilling and sampling.

Our exploration team will prepare field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials observed during drilling and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the Geotechnical Engineer's interpretation and include modifications based on observations and laboratory tests.

We will perform up to 14 pavement cores to determine the existing pavement and subgrade. We sample up to 5 feet below the existing grades and collect 2 samples at each pavement core location.

Property Disturbance: Terracon will take reasonable efforts to reduce damage to the property. However, it should be understood that in the normal course of our work some disturbance could occur including rutting of the ground surface and damage to landscaping and/or crops. We have included in our scope of services, budget for minor site restoration, such as smoothing, seeding, and strawing of ruts left by our equipment. Replacement of sod or other landscaping or removal of felled trees is not included.

We will backfill borings with auger cuttings and/or bentonite pellets upon completion. Pavements will be patched with cold-mix asphalt and/or ready-mixed concrete, as appropriate. Our services do not include repair of the site beyond backfilling our boreholes and patching existing pavements. Excess auger cuttings will be dispersed in the general vicinity of the borehole. Because backfill material often settles below the surface after a period, we recommend boreholes to be periodically checked and backfilled by others, if necessary. We can provide this service or grout the boreholes for additional fees at your request.

Safety

Terracon is not aware of environmental concerns at this project site that would create health or safety hazards associated with our exploration program; thus, our Scope considers standard OSHA Level D Personal Protection Equipment (PPE) appropriate. Our Scope of Services does not include environmental site assessment services, but identification of unusual or unnatural materials observed while drilling will be noted on our logs.

Exploration efforts require borings into the subsurface, therefore Terracon will comply with local regulations to request a utility location service through Tennessee 811. We will consult with the landowner/client regarding potential utilities or other unmarked underground hazards. Based upon the results of this consultation, we will consider the need for alternative subsurface exploration methods as the safety of our field crew is a priority.

Private utilities should be marked by the owner/client prior to commencement of field exploration. Terracon will not be responsible for damage to private utilities not disclosed to us.

Terracon's Scope of Services does not include private utility locating services. If the landowner/client is unable to accurately locate private utilities, and it becomes apparent that the risk of private utilities on/near the site exists, then Terracon will initiate these services by forwarding the additional scope and corresponding fee to our client for approval.

The detection of underground utilities is dependent upon the composition and construction of the utility line; some utilities are comprised of non-electrically conductive materials and may not be readily detected. The use of a private utility locate service would not relieve the landowner/client of their responsibilities in identifying private underground utilities. These services are only intended to help with identifying near surface conflicts within an approximate 10-foot radius of our boring/exploration points and not for complete scanning of the entire site/property.

Site Access: Terracon must be granted access to the site by the property owner. Without information to the contrary, we consider acceptance of this proposal as authorization to access the property for conducting field exploration in accordance with the Scope of Services. Our proposed fees do not include time to negotiate and coordinate access with landowners or tenants. Terracon will conduct field services during normal business hours (Monday through Friday between 7:00am and 5:00pm). If our exploration must take place over a weekend or at night, please contact us so we can adjust our schedule and fee.

Traffic Control: For the work scope of this proposal, we have budgeted for up to 3 days subcontracting traffic control services (signage and flagman) during our drilling activities. This proposal is based on the assumption that one traffic lane can be closed temporarily within a hundred feet (+/-) of our drill rig during our drilling activities. Alternatively, others could provide all required traffic control as a cost savings measure.

Laboratory Testing

The project engineer will review field data and assign laboratory tests to understand the engineering properties of various soil strata. Exact types and number of tests cannot be defined until completion of fieldwork, but we anticipate the following laboratory testing may be performed:

- Water content
- Atterberg limits
- Grain size analysis

- Moisture-density relationship
- California Bearing Ratio (CBR)

Our laboratory testing program often includes examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we will describe and classify soil samples in accordance with the Unified Soil Classification System (USCS).

Engineering and Project Delivery

The results of our field and laboratory programs will be evaluated, and a geotechnical engineering report will be prepared under the supervision of a licensed professional engineer. The geotechnical engineering report will provide the following:

- Boring logs with field and laboratory data
- Stratification based on visual soil classification
- Groundwater levels observed during and after the completion of drilling
- Site Location and Exploration Plans
- Subsurface exploration procedures
- Description of subsurface conditions
- Earthwork recommendations including site/subgrade preparation
- Recommended pavement options and design parameters

In addition to an emailed report, your project will also be delivered using **Terracon Compass (Compass)**. Upon initiation, we provide you and your design team the necessary link and password to access the website (if not previously registered). Each project includes a calendar to track the schedule, an interactive site map, a listing of team members, access to the project documents as they are uploaded to the site, and a collaboration portal. We welcome the opportunity to have project kickoff conversations with the team to discuss key elements of the project and demonstrate features of Compass. The typical delivery process includes the following:

- Project Planning – Proposal information, schedule and anticipated exploration plan
- Site Characterization – Findings of the site exploration and laboratory results
- Geotechnical Engineering Report

When services are complete, we upload a printable version of our completed Geotechnical Engineering report, including the professional engineer's seal and signature, which documents our services. Previous submittals, collaboration, and the report are maintained in our system. This allows future reference and integration into subsequent aspects of our services as the project goes through final design and construction.

Additional Services

In addition to the services noted above, the following are often associated with geotechnical engineering services. Fees for services noted above do not include the following:

Review of Plans and Specifications: Our geotechnical report and associated verbal and written communications will be used by others in the design team to develop plans and specifications for construction. Review of project plans and specifications is a vital part of our geotechnical engineering services. This consists of review of project plans and specifications related to site preparation, foundation, and pavement construction. Our review will include a written statement conveying our opinions relating to the plans and specifications' consistency with our geotechnical engineering recommendations.

Observation and Testing of Pertinent Construction Materials: Development of our geotechnical engineering recommendations and report relies on an interpretation of soil conditions. Our assessment is based on widely spaced exploration locations and the assumption that construction methods will be performed in a manner sufficient to meet our expectations and consistent with recommendations made at the time the geotechnical engineering report is issued. We should be retained to conduct construction observations, and perform/document associated materials testing, for site preparation, foundation, and pavement construction. These services allow a more comprehensive understanding of subsurface conditions and necessary documentation of construction to confirm and/or modify (when necessary) the assumptions and recommendations made.

Exhibit C - Compensation and Project Schedule

Compensation

Based upon our understanding of the site, the project as summarized in Exhibit A, and our planned Scope of Services outlined in Exhibit B, our base fee is shown in the following table:

Task	Lump Sum Fee[2]
Subsurface Exploration[1], Laboratory Testing, Geotechnical Consulting and Reporting	$34,500
Subcontracted Traffic Control (up to 3 days)	$3,500
Total	**$38,000**

1. The lump sum fee considers one drill rig mobilization and no unexpected onsite delays. If additional drill rig mobilizations are required, an additional fee of $1,500 would be invoiced for rig mob/demob in addition to drilling fee. A drill crew standby rate of $300 per hour would be invoiced for unexpected delays.
2. Proposed fees noted above are effective for 90 business days from the date of the proposal.

If additional services are requested, the following fees would apply or see attached Exhibits for additional information:

Additional Task	Lump Sum Fee[1]	Initial for Approval
Review of Plans and Specs	$500	
Limited Path Clearing	Fee TBD	
Subcontracted Private Utility Clearance[2]	Fee TBD	

Additional Task	Lump Sum Fee[1]	Initial for Approval

1. Proposed fees noted above are effective for 90 business days from the date of the proposal.
2. If the owner/client is unable to accurately locate private utilities, we can subcontract a private utility locating firm and/or utilize geophysical equipment, if necessary. The detection of underground utilities is dependent upon the composition and construction of utility lines. Some utilities are comprised of non-electrically conductive materials and may not be readily detected. The use of a private locate service does not relieve the owner of their responsibilities in identifying private underground utilities. These services are only intended to help with locating potential near surface utility conflicts within a 10-foot radius of our proposed borings.

Our Scope of Services does not include services associated with site clearing, wet ground conditions, tree or shrub clearing, or repair of/damage to existing crops. If such services are desired by the owner/client, we should be notified so we can adjust our Scope of Services. If borings are performed when crops are planted, a crop damage agreement should be established between the Client and crop owner prior to subsurface exploration.

Unless instructed otherwise, we will submit our invoice(s) to the address shown at the beginning of this proposal. This includes final and any progress invoices as work progresses. If conditions are encountered that require Scope of Services revisions and/or result in higher fees, we will contact you for approval, prior to initiating services. A supplemental proposal stating the modified Scope of Services as well as its effect on our fee will be prepared. We will not proceed without your authorization.

Project Schedule

We developed a schedule to complete the Scope of Services based upon our existing availability and understanding of your project schedule. However, our schedule does not account for delays in field exploration beyond our control, such as weather conditions, delays resulting from utility clearance, permit delays, resources, or lack of permission to access the boring locations. In the event the schedule provided is inconsistent with your needs, please contact us so we may consider alternatives.

Delivery on Compass	Schedule [1, 2]
Kickoff Call with Client	5 business days after notice to proceed

Delivery on Compass	Schedule [1, 2]
Site Characterization	15 business days after completion of field exploration program
Geotechnical Engineering	20 business days after completion of field program
Final Report Deliverable	8 to 9 weeks following NTP

1. Upon receipt of your notice to proceed we will activate the schedule component on **Compass** with specific, anticipated dates for the delivery points noted above as well as other pertinent events.
2. Standard workdays. We will maintain an activities calendar within on **Compass**. The schedule will be updated to maintain a current awareness of our plans for delivery.

Exhibit D – Site Location

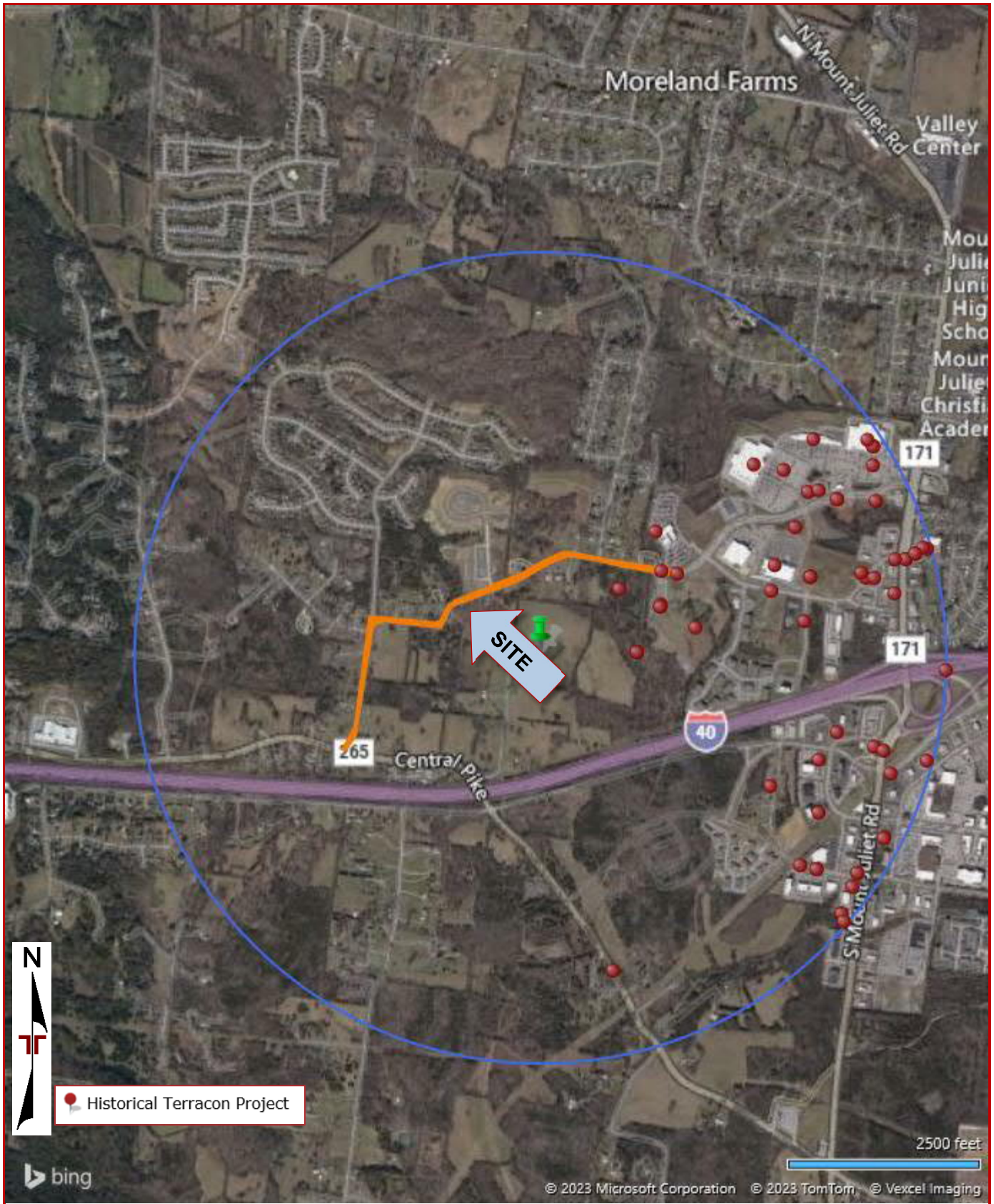
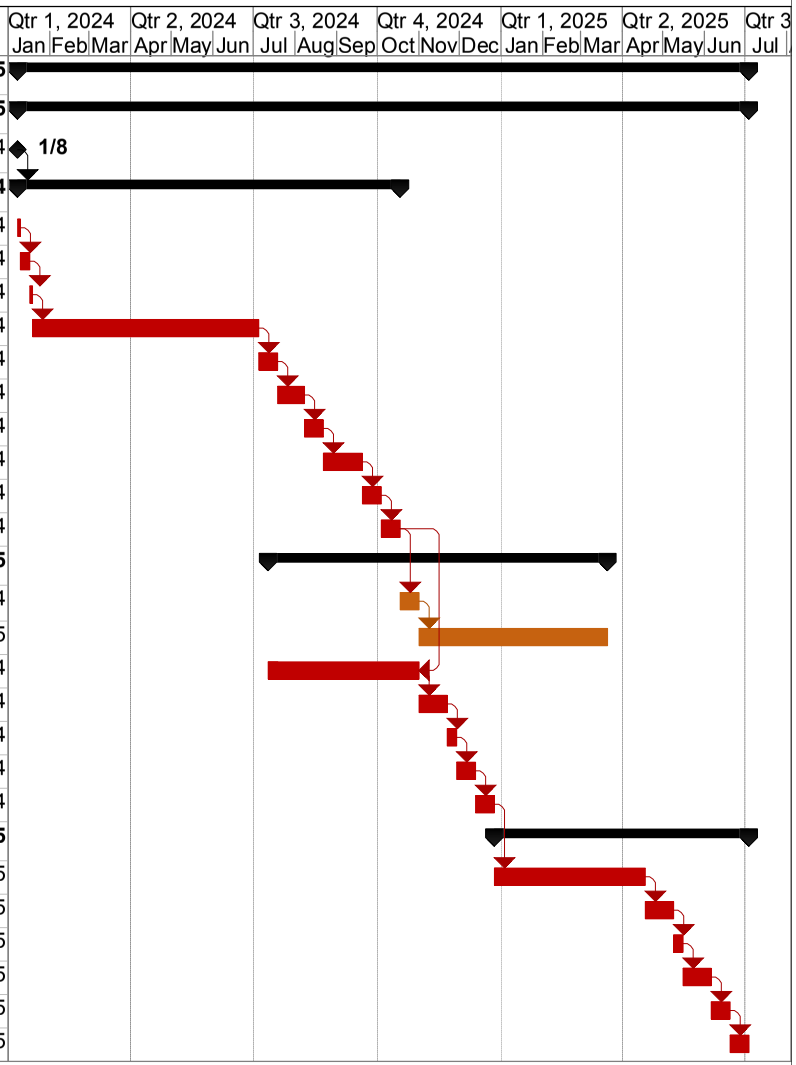


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

Pleasant Grove Road Widening
City of Mt. Juliet, TN
From Central Pike to Old Pleasant Grove Road

ID	Task Name	Duration	Start	Finish
1	**OVERALL DURATION**	**389 days**	**Mon 1/8/24**	**Thu 7/3/25**
2	**NTP TO ROW PLANS**	**389 days**	**Mon 1/8/24**	**Thu 7/3/25**
3	**Notice to Proceed**	0 days	Mon 1/8/24	Mon 1/8/24
4	**NEPA**	**204 days**	**Mon 1/8/24**	**Thu 10/17/24**
5	Initial Environmental Coordination with TDOT	2 days	Mon 1/8/24	Tue 1/9/24
6	Prepare responses to TDOT Section 106 comments	5 days	Wed 1/10/24	Tue 1/16/24
7	Submit updated Section 106 document to TDOT	2 days	Wed 1/17/24	Thu 1/18/24
8	TDOT Additional Studies	120 days	Fri 1/19/24	Thu 7/4/24
9	Prepare Environmental Document	10 days	Fri 7/5/24	Thu 7/18/24
10	TDOT Review	14 days	Fri 7/19/24	Wed 8/7/24
11	Address TDOT Review Comments	10 days	Thu 8/8/24	Wed 8/21/24
12	FHWA Review	21 days	Thu 8/22/24	Thu 9/19/24
13	Address FHWA Review Comments	10 days	Fri 9/20/24	Thu 10/3/24
14	TDOT Notice of Approved Final Environmental Documer	10 days	Fri 10/4/24	Thu 10/17/24
15	**PRELIMINARY PLANS**	**180 days**	**Fri 7/12/24**	**Thu 3/20/25**
16	**NTP for DESIGN**	10 days	Fri 10/18/24	Thu 10/31/24
17	Utility Coordination	100 days	Fri 11/1/24	Thu 3/20/25
18	Development of Preliminary Design and Plans	80 days	Fri 7/12/24	Thu 10/31/24
19	QC of Preliminary Plans and Recovery	15 days	Fri 11/1/24	Thu 11/21/24
20	City Review of Preliminary Plans	5 days	Fri 11/22/24	Thu 11/28/24
21	LPDO Preliminary Plans Review	10 days	Fri 11/29/24	Thu 12/12/24
22	Finalize Preliminary Plans	10 days	Fri 12/13/24	Thu 12/26/24
23	**ROW PLANS**	**135 days**	**Fri 12/27/24**	**Thu 7/3/25**
24	Development of ROW Plans	80 days	Fri 12/27/24	Thu 4/17/25
25	QC of ROW Plans and Recovery	15 days	Fri 4/18/25	Thu 5/8/25
26	City Review of ROW Plans	5 days	Fri 5/9/25	Thu 5/15/25
27	Finalize ROW Plans	15 days	Fri 5/16/25	Thu 6/5/25
28	LPDO Preliminary Plans Review	10 days	Fri 6/6/25	Thu 6/19/25
29	Develop Final ROW Plans	10 days	Fri 6/20/25	Thu 7/3/25



Pleasant Grove Road
NTP thru ROW Plans
Date: Mon 12/18/23

Task		Inactive Task		Start-only	
Split		Inactive Milestone		Finish-only	
Milestone		Inactive Summary		Critical	
Summary		Manual Task		Critical Split	
Project Summary		Duration-only		Progress	
External Tasks		Manual Summary Rollup		Deadline	
External Milestone		Manual Summary			