Project Understanding and Approach

Project Understanding

Urban Engineers (Urban) is pleased to respond to South Jersey Transportation Planning Organization's (SJTPO) request for consultant support to assist SJTPO and Salem County in advancing two roundabout projects. The primary objective of these projects, as identified in the RFP, is to design a Modern Roundabout for two intersections located in Salem County. Urban has extensive experience with Modern Roundabouts from conceptual design through final design and construction. Our experience includes designs for the State, Metropolitan Planning Organizations (MPO), as well as several municipalities and counties. Urban is currently working on roundabout design projects with the North Jersey Transportation Planning Authority (NJTPA) and the Delaware Valley Regional Planning Commission (DVRPC) on Federally Funded projects. Additionally, Urban has provided peer review of roundabout designs for both NJDOT and PennDOT.

The proposed projects have been selected under the Local Safety Program through the federal authorization process for construction. The Local Safety Program is a federally-funded program established by SJTPO, in conjunction with NJDOT, using Federal Highway Administration's (FHWA) Highway Safety Improvement Program (HSIP) funds. Urban has successfully delivered several projects using the federal local-lead process, including the Local Scoping projects of Commissioner's Pike Phase III in Alloway Township, Salem County and Commissioner's Pike Phase IV in the Townships of Pilesgrove and Upper Pittsgrove, Salem County and the Scoping and Final Design of the Resurfacing of Almond Road from Centerton Road (CR 553) to the Salem/Cumberland County Boundary in Pittsgrove Township, Salem County. Additionally, Urban is currently designing two roundabouts identified for the SJTPO Roundabout Pilot program. One project is located in the Borough of West Cape May at the intersection of West Perry Street (CR 633), Park Boulevard and Myrtle Avenue and the second project is located in the Borough of Woodbine at the intersection of Woodbine-Ocean View Road (CR 550) and Dennisville-Petersburg Road (CR 610). Our familiarity with the process will allow Urban to commit to a schedule that includes submissions well in advance of NJDOT/SJTPO's local-lead timeline for project authorization.

Urban will identify geometric and safety deficiencies and other key problems in consultation with SJTPO, Salem County and stakeholders in formulating design solutions. Some preliminary key problems and issues identified include:

- Fifth and sixth legs into the intersections
- Vehicle speeds / Traffic calming
- Intersection geometry / Truck movements and size / safety / utility placement
- Pedestrian needs / ADA compliant designs/ Bicycle compatibility
- Proper signing and striping
- Traffic control during construction
- Stormwater / Permitting

The project goals are to improve the intersection safety, accommodate large vehicles turning movements, provide pedestrian/vehicle/bicycle compatibility, and provide proper signage and striping. Urban will evaluate site conditions, analyze required improvements, determine regulatory constraints, and other relevant factors and communicate a work program that best serves the County, local community and stakeholders.

Project Approach

The projects will utilize FHWA HSIP funds. Therefore, all documents must conform to the NJDOT Federal-Aid requirements and must be approved by NJDOT prior to the award of the construction contract. Urban will utilize the knowledge gained from working on similar federally funded projects to assist the County with the preparation of the required documents to secure the federal funds for the project. We will create a project management strategy which will satisfy the scope of work and County's goals for the projects. The scope of work will include performing topographical surveys, performing roadside safety assessments, securing regulatory permits, obtaining proposed construction approvals, developing and designing the improvements, preparing and hosting public information sessions, preparing plans, specifications, and cost estimates (PS&E), preparing contract documents and answering requests for information during the advertisement for bids.

Urban's project approach will produce regulatory compliant designs that target the identified deficiencies. Although Urban has extensive experience preparing contract documents for Salem County and NJDOT, it is our identification and management of prospective issues that creates value and cost savings for clients.

Project Management Strategy

Urban implements a project management strategy that emphasizes focus on scope, schedule and budget to help deliver our projects in an organized manner, on-time and within budget. Since a change to any one of these components can affect the others both positively and negatively, there needs to be a balanced approach to triple constraint management. Urban will utilize our project management strategy to enhance this project in the following ways:

Scope – Avoid scope creep and maintain scope intent, to keep project costs down. Avoid impacts to Right-of-Way (ROW), utilities and the environment when practical. Communication is key in keeping to the original scope of the project.

Schedule – Manage the critical path. For this assignment, utilities and ROW are the driver. Urban has the resources to produce an effective, efficient, and accelerated schedule while paying close attention to critical path tasks.

Budget – Projects that languish, cost more to deliver. Regular budget monitoring and regular communication with SJTPO and the County can help accelerate project delivery and thereby control costs. Urban will deliver hard-cost estimates using actual contractor production rates and provide quarterly updates.

Urban will deliver all required submissions well in advance of NJDOT Local Lead timeline for authorizing the project. We have the available resources to complete the project and, if needed, additional resources/staff to expedite the project.

Upon Notice to Proceed (NTP), Urban will conduct a kick off meeting with the County, SJTPO and NJDOT-Local Aid to formalize the schedule provided in this proposal. Our first priority will be to complete field visits with the County and SJTPO, travelling to each project site to discuss deficiencies and opportunities/ideas for the improvements. The next key project task will be to obtain and review record drawings, establish survey control, and perform field survey required to create the project base mapping.

TASK 1 – COORDINATION & PUBLIC OUTREACH

Upon Notice to Proceed (NTP), Urban will conduct a kick off meeting with the County, SJTPO and NJDOT-Local Aid to formalize the schedule provided in this proposal. Our first priority will be to complete field visits with the County, SJTPO and Local Stakeholders, travelling to each project site to discuss deficiencies and opportunities/ideas for the improvements.

Urban will coordinate with SJTPO, Salem County and Pittsgrove Township at the beginning throughout the project duration. In addition to the kick-off meeting, Urban will provide project status update memos every two weeks via email as requested in the RFP. Urban will provide minutes of meetings and email summaries of all conversations.

Meetings (Assume 10 Meetings)

- Project Kick-off Meeting
- Initial Field Visit
- Concept Review Meeting
- Public/Stakeholder Meetings (Assume 4)
- Pre-Final Review
- Pre-PS&E Review
- PS&E Comments Review

An inclusive, transparent, consensus building public engagement process is essential. As a first step, Urban will prepare a draft Public Involvement Action Plan (PIAP) that engages, educates and informs stakeholders and the public. While we anticipate refinement in discussion with SJTPO, we believe these are the key elements:

- Urban will identify key stakeholders for the project, including Salem County and local public officials, the school district, fire company/police/emergency services, Chamber of Commerce among others.

- A key element of this project's PIAP is education. Roundabouts traditionally are misunderstood, and often as a result do not receive public support. The programs that fund and therefore shape safety projects are complex. Our goal is to build understanding and consensus, and demystify the complexity through well thought out meetings and materials. The public must understand SJTPO's Local Safety Program (LSP) and the Highway Safety Improvement Program (HSIP), the project development process, as well as how roundabouts are designed and operate. A multitude of information is available on these topics and it is not our intent to reinvent the wheel. We are continually culling the most recent information on these topics and will use and/or refine existing sources, including those we already have. We will develop a suite of informational materials with graphics to be used at meetings, posted to SJTPO and stakeholder websites, and for use with the press. Subject to discussion and refinement with SJTPO, we suggest these materials include a project summary, fact sheets, and FAQs.

- We anticipate holding four public meetings – two for each location. We assume that SJTPO will assist or secure the meeting locations. For each meeting, we will prepare sign in sheets, comments forms, and graphics/boards/display materials. We suggest that the initial meeting for each location introduce the team, project and schedule; provide informational materials on the policy, process and design/operational aspects of the project, and use base maps to show initially identified issues, and record information and input from attendees. The second meeting would show the key aspects of the

analysis, such as the VISSIM/3D model mentioned in the proposal and the proposed design. We anticipate that there may be a need for special focus meetings with stakeholder groups between the first and second meetings to address specific issues unique to that group (for example emergency services or the school district) and have allowed time in the budget for three such meetings.

Educating and informing the public about changes to existing roadway configurations due to the proposed design, specifically with Modern Roundabouts, is of paramount importance. There are many misconceptions about Modern Roundabouts versus the traffic circles that are being removed across the State. It is our job as the roundabout experts to dispel those misconceptions, provide the public with proper educational tools, and answer their questions. Urban will perform analysis for the roundabout for its opening year, and for a 20-year design horizon if desired by the County. In addition to performing capacity analysis, Urban can also utilize the VISSIM software for educational purposes and public involvement. VISSIM is a traffic operations analysis simulation tool that has the ability to develop a three-dimensional (3D) model. Animations of the 3D model can be set up so the public can see the existing and proposed conditions during peak hours, demonstrating the efficiency of the proposed intersection design. Provided below are screen captures of animations that were created for an NJDOT project that is currently in construction. The animation was displayed at the pre-construction public information center and proved to be a successful tool in helping to educate the locals, public officials and emergency responders of the Modern Roundabout intersection.

An additional tool that Urban has utilized on past roundabout projects was to create educational pamphlets to be handed out to the public which gave a short history of modern roundabouts and answered commonly asked questions.

Modeling can show the existing condition vs. the proposed condition

Modeling can also show proposed condition from different angles

DELIVERABLES:

- Meeting and Discussion Summaries
- Bi-Weekly status updates (via e-mail)
- Public Outreach
- Public Involvement Action Plan (PIAP)

TASK 2 – SURVEYING/BASE MAPPING

As an initial action item, survey and base mapping will be developed. At Notice-to-Proceed (NTP), our survey team, Churchill Consulting Engineers (CCE), will coordinate with the SJTPO and Salem County to establish the plan for this project. CCE will utilize ground based survey and digital scanning to produce mapping, or current conditions, at each intersection. Their ground survey will utilize equipment with the latest technologies to perform an efficient, accurate survey for the bases of each design. Their digital scanning capabilities offer an opportunity to provide a survey grade point cloud for existing improvements that may not be surveyed conventionally, all in a quick and detailed manner. CCE also utilizes field to finish capabilities that, when used, can eliminate inefficient drafting and decrease conventional digital mapping. CEE also utilizes their own FTP site that allows for fast exchange of digital data between their field crews and office personnel. This allows for a real-time assessment, if needed, of day to day survey data collection.

Survey Control

Horizontal and vertical primary survey control will be established. This entails setting and locating one pair of inter-visible, recoverable control points at each location. Survey control will be established in a modified ground coordinate system, based on coordinates observed in the NJ State Plane Coordinate System, NAD 83 (NJSPCS-NAD 83), “scaled to ground” utilizing a 0,0 coordinate, in accordance with currently accepted NJDOT control practices.

Control elevations will be referenced to the North American Vertical Datum, 1988 (NAVD 88). This task will also consist of establishing the control traverse and benchmarks to perform field survey location effort.

Topographic Survey and Mapping

CCE field surveyors will perform an on-site field survey of each intersection utilizing a combination of RTK GPS, conventional total station, digital levels, and high definition laser scanning. This effort will include identification of existing features (i.e. signs, fences, ground surface types, building types, etc.). Surface and subsurface utilities (i.e. catch basins, manholes, valves, utility poles, hydrants, sanitary and storm sewer, water and gas mains, etc.) will be located. CCE will call for a utility mark-out prior to our field work and will locate any painted marks placed by others indicating the existence of underground utilities. The approximate horizontal location of overhead wires will also be sketched. We will also attempt to obtain any utility as-built plans from Salem County, municipal records, and/or from any available utility agencies known to have facilities within the project area. This information will be incorporated into the mapping for any subsurface utility that cannot be field verified. Mapping will meet or exceed National Map Accuracy Standards and will comply with the NJDOT Surveying Manual and NJDOT Article 51.

ROW Mosaic

CCE will perform the needed County research for record deeds and mapping. These documents will be reviewed and existing monuments will be identified for field crews to recover. A combination of the recovered monumentation and the deeds/documents researched will help define the location of ROW lines and parcels. A deed mosaic will be created to aid in ROW/parcel resolution. Parcels, ROW lines, and centerline geometry will be overlaid on the topographic mapping. All established baselines found from the document research will be provided. CCE will provide a table of baseline stations, coordinates of PC, PCC, PT, PI, and equation stations, and ties, including tie sketches of all secondary control traverse points set in the field.

DELIVERABLES: Base Mapping

TASK 3 – PRELIMINARY ENGINEERING

Urban will begin the assignment by meeting with SJTPO, Salem County and participating agencies to discuss project issues/history, the problem statement, existing conditions, project limits, opportunities to minimize substandard design elements, design speeds, and applicable project standards.

Field Verification/ADA Compliance Review

Each project will begin with an initial assessment to identify the work effort needed to bring the project limits into compliance with the Americans with Disability Act (ADA). Urban is well-suited to perform these assessments as we have conducted ADA compliance assessments for over 1,100 ramps and 16 miles of sidewalk on 18 projects in the South Region for the NJDOT.

Drainage/Stormwater Management

Urban strives for permittable drainage designs, suitable for Categorical Exclusion Documentation (CED) approval, that comply with NJDEP stormwater management (SWM), wetland, and flood hazard rules. We propose the following cost-effective approach: (1) Save and maintain as much of the existing drainage system as possible, (2) Upgrade while being cognizant to minimize impacts to ROW and subsurface utilities, (3) If basins are necessary, use existing ROW as available, and (4) Advance drainage issues concurrently with the environmental process to identify permits early and eliminate surprises.

Urban will begin by conducting site visits of the project area and obtaining maps and data for SWM rules compliance. Jurisdiction is based on total project disturbance exceeding one (1) acre or the proposed impervious coverage increasing by more than ¼ acre. If either is exceeded, the project is defined as a major project and is

subject to the SWM Rules. Map information is captured from the Federal, (NOAA, USGS, others) State (NJDOT, NJDEP, others), and local municipality levels. This information is captured electronically as GIS data and managed with Arc GIS. This allows for the generation of drainage areas that can provide a seamless transition into the Hydrologic & Hydraulic (H&H) and SWM analysis as necessary. Urban will draw upon these resources to perform SWM calculations and to assess spread, hydrologic and hydraulic, pipe size, and routing requirements. We provide inlet and curb opening details that comply with agency guidance, and determine if soils testing is necessary to establish soil permeability and the seasonal water table. If a non-structural strategy is not feasible, structural Best Management Practices (BMP) will be evaluated. Our hydraulic designs will comply with the NJDEP Flood Hazard Area Rule, NJDEP SWM Rules, BMPs, and Soil Erosion & Sediment Control Standards.

The base drainage system design will include size, shape and location of inlets, manholes, pipes and SWM BMPs, which require detailed coordination with the existing utilities. Efforts will be made to minimize utility relocations. The drainage system design also includes the location of basins which may require coordination with ROW. We will use the existing drainage patterns, control flooding of the roadway surface, and minimize environmental impacts.

Traffic Engineering Facilities

Within preliminary engineering, our focus is to determine Traffic Engineering Facility Locations. This is performed to a level necessary to identify ROW needs and utility conflicts (aerial and underground). Elements involved include preliminary signing, lighting warrant analysis report, and lighting design layout. A traffic analysis of the construction staging is performed to determine potential traffic impacts and develop mitigation measures if needed.

Construction Staging

Early understanding of a project's construction largely influences its success. Failure to consider safety, community support, impacts, traffic, and construction complexity can lead to increased costs, schedule delays, and potential design changes. Urban will continually evaluate and review how a project is constructed through the project development. In PE, we develop Preliminary Detour and Construction Staging Plans in order to help determine the number of construction stages, anticipated durations, and if a detour of traffic will be necessary. Urban uses senior construction professionals for constructability reviews. We evaluate the staging for conformance with current construction methods and recommend improvements to compress schedules and reduce road user costs.

Urban's construction staging strategies maximize the following: (1) Safety for motorists, bicyclists, ADA, and pedestrians, (2) Safety of construction and inspection personnel, (3) Contractor work areas / shielding / clear zones / material storage locations, (4) Traffic flow on State and evacuation routes, and supporting roads, and (5) EMS and school bus moves. Urban's construction staging strategies minimize the following: (1) Construction stages/contract durations, (2) Seasonal constraints (holidays, summer, and snow removal), (3) Environmental impacts, (4) Impacts to daily commuters, transit, and school buses, (5) Impacts to local business and residents (access, noise), and (6) Detours.

Urban recommends obtaining stakeholder consensus on staging very early to reduce surprises and help obtain project support. This early stakeholder engagement approach fosters a cost-effective design with reduced durations, eliminates rework, and promotes innovation.

Prepare 60% Plans

Urban will submit for review 60% design plans to Salem County, SJTPO and any other required agencies. Included with this submission will be an anticipated listing of non-standard items and items that may require special provisions to be prepared. A preliminary cost estimate will also be prepared.

Anticipated plans include the following:

- Key Sheet
- Estimate-Distribution of Quantities
- Typical Sections
- Plan Sheet Index
- Construction Plans
- Drainage/Grading Plans
- Environmental Plans
- Profiles
- Ties
- Traffic Control and Staging Plans
- Traffic Signing and Striping Plans

Prepare CED Sections I & II

Based on the project need, environmental considerations, and the information provided in the RFP, the projects should not individually or cumulatively have significant environmental impacts. Therefore, the National Environmental Policy Act (NEPA) document classification is anticipated to be a Categorical Exclusion.

Urban will work to help expedite preparation of a CED suitable for submission and approval. Urban will work with the NJDOT, providing the necessary information and supporting documents required to submit and receive approval of the CED.

The Overall Roundabout Design Process

There are several reasons for constructing a modern roundabout. These reasons include overall intersection safety, traffic calming, intersection efficiency and volume distribution, gateways to transition from differing roadway types (i.e., freeway/highway to suburban settings) or as central features as an entrance to a community or development. Several factors go into the design of a modern roundabout including total volume, directional volume, vehicle type and location.

Right Sizing

The projects have been identified as safety improvements. Factors such as high speed approaches and multiple decision points (5 and 6 legged intersections) will need to be accounted for when designing the roundabout.

For a Modern Roundabout, the typical point at which an approach would require two lanes versus a single lane entry is when the entering plus conflicting vehicles are between 1300 and 1400 vehicles. Based on the traffic counts provided in the RFP, a single lane entrance on all approaches and a single lane circulatory roadway would be more than adequate to handle the existing volumes.

The area surrounding both intersection locations is mostly rural or residential. Farms near the project locations indicate that there could be larger trucks that would navigate through these intersections. We would recommend that the roundabouts be designed for a WB-62 sized vehicle. Guidelines provided in the National Cooperative Highway Research Council (NCHRP) Report 672 for single lane roundabouts that are designed for a WB-62 design vehicle are recommended to have an Inscribed Circle Diameter (ICD) of 130 to 160 feet. Our initial concepts for these intersections were designed with an ICD of 160 feet.

The alignment of the approach legs is critical in roundabout design, especially for those legs that have high-speed approaches. Urban recommends the use of the offset left approach which allows for greater deflection upon approach and will promote slower speed upon entry.

Design Checks

For all roundabout designs, Urban utilizes a thorough analysis approach that includes over 10 different design criteria. It is important to note that each of the design criteria can influence the efficiency and overall safety of a roundabout; each needs to be designed appropriately. These criteria include the following:

Roundabout Size – As stated above in the Right Sizing section, the desired roundabout for these intersections would be a single lane roundabout with and ICD ranging from 130 to 160 feet.

Entry Speed – The recommended entry design speed for a single lane roundabout is 25 MPH. The radii of the curves entering, circulating and exiting the roundabout are applied to equations provided in the NCHRP 672 guideline. Urban will provide geometric designs that will meet the entry speed requirements.

Entry Width – The width of any one location within the roundabout plays an important role in the function of the roundabout. The wider the roadway the faster the speeds will be and conversely, the more narrow the roadway the slower the speeds will be. The recommended entry width for a single lane roundabout is between 14 to 18 feet. Urban will provide geometric designs that will meet the entry width requirements.

Entry & Exit Radii – Roadway width and radius greatly influence speeds of the vehicles utilizing the roundabout. It is also important to monitor the exiting speeds of roundabouts particularly where there will be pedestrian and bike crossings. NCHRP 672 provides acceleration equations to help determine the exact speed that the vehicle will be traveling at the point of the pedestrian/bike crossing along the exit path. This information will help in properly designing these types of exits more safely.

Circulatory Roadway Width – Typical circulatory roadway width for single lane roundabouts range from 16 to 20 feet. It is important to design the circulatory roadway width so that a driver does not feel that there is enough room for two lanes. To avoid this, Urban has successfully utilized a roadway width of 16 feet.

Truck Apron Width – When designing a roundabout it is important to take in to consideration all of the vehicles that could utilize the intersection. Large vehicles require a larger amount of asphalt to make turning movements, specifically left turns, because the truck will need to navigate around three quarters of the roundabout. One way to accommodate these larger vehicles it to provide a wider circulatory roadway, but the use of wider roadways promotes higher speeds and the possibility of vehicles attempting to create additional lanes. Thus, a more effective solution is to create a truck apron that can be navigated by larger vehicles. The truck apron will vary in width depending on the initial ICD of the roundabout and by how much the large vehicles will track over the inside curb line. To prevent tire damage and overturning, the truck apron will have a sloping curb instead of a full height curb. The truck apron width for this roundabout will be determined after performing truck turning templates for the appropriate design vehicles.

Grading – For safety and drainage purposes, it is preferable for the profile of any approaching leg and the circulatory roadway to be designed with a profile of less than 4%. Based on an inspection of the existing topography of the intersection, this grading requirement can be achieved.

Splitter Island Length – Splitter islands serve many purposes in roundabout design including (1) visual queues to the driver to alert them about a change in traffic pattern, (2) provide deflection along the drivers path to promote slower speeds, (3) separate entering and exiting vehicles along the same leg to avoid wrong way driving, and (4) provide refuge for crossing pedestrians/bicyclists. The length of the splitter island will vary depending on the size of the roundabout, available roadway width and approaching design speed. Higher designs speeds, such as the 50 MPH posted speed of some of the approaching roadways, would require longer splitter islands to alert the

driver sooner that they need to slow down. Based upon the existing posted speeds of the approaches, we would design splitter island that are 100 to 200 feet in length.

Stopping Sight Distance – There are three types of stopping sight distance that need to be evaluated as part of any roundabout design check including (1) distance along the approach of the roundabout, (2) distance within the circulatory roadway, and (3) distance to the crosswalk on the exit of the roundabout. Providing each of these stopping sight distances is important to a proper roundabout design. These distances and their associated clear zone requirements will be graphically represented in a Combined Sight Distance Diagram.

Intersection Sight Distance – This sight distance measures the distance required for entering vehicles to see vehicles to their left, both circulating and entering from the adjacent approach. This will give the driver enough time to discern whether or not they have an appropriate gap in traffic to enter the roundabout. These sight distances will also be a provided as part of the Combined Sight Distance Diagram.

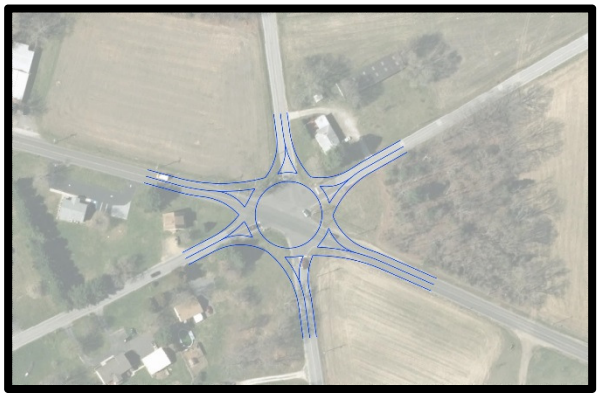
Central Island Landscape Zone – Contrary to what some believe, sight obstructions within the central island are beneficial to the roundabout safety as long as they are the appropriate sight obstructions. When entering the roundabout the driver should be focusing on the vehicles that are to their immediate left, which are either entering or circulating the roundabout. The driver should not be concerned with the a vehicle that is entering the roundabout on the opposite side of the roundabout. Therefore, higher vegetation or physical objects that obstruct the view of the cross roundabout vehicles will allow the driver to focus their attention where it is needed. Conversely, any of the already determined sight distance paths (shown on the Combined Sight Distance Diagram) should not be obstructed by any vegetation or other objects. The Central Island Landscape Zone will determine the areas within the central island where only low-lying vegetation can be planted versus those areas where taller vegetation would be appropriate.

High Speed Approach Designs – There are several strategies to address high speed (i.e., speeds greater than 30 MPH) approaches to roundabouts. Some of these strategies include using larger advanced warning signs, reducing the width of the approach lane, increasing the length of splitter islands, enhancing lighting, providing a transition speed zone, and introducing reversing curves (i.e., chicanes) along the approaches. These strategies along with many others are site specific and will need to be evaluated for their effectiveness each specific location.

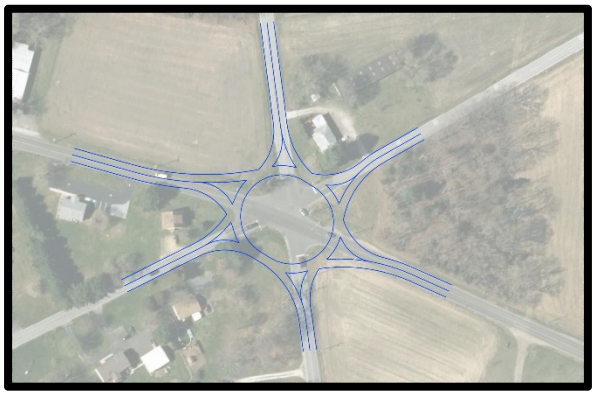
Urban will create a an overall roundabout design check report describing the details of the above criteria as it relates the proposed design to the most recent design guidelines provided by NCHRP Report 672. In addition, with the volumes that were provided by the County, Urban has the ability to perform a capacity analysis using multiple software tools including, Highway Capacity Software (HCS) 7, SIDRA 8 or VISSIM to confirm the details of the roundabout.

LOCATION 1: GARDEN ROAD (CR 674), PARVIN MILL ROAD (CR 645) AND ALVINE ROAD (CR 655)

Location 1, also known as 6 points, is a six legged intersection. Four of the six legs are stop controlled with stop signs and flashing red beacons. The remaining two legs (Garden Road) have an overhead flashing yellow beacon on each approach. Based on the guidelines detailed in the section on the Roundabout Design Process, this intersection would fall into the category of a single lane modern roundabout with an ICD between 130' – 160'. A sketch of a 160' ICD roundabout is depicted in the graphic below.



However, we have learned from similar roundabout design projects, that when you add a fifth and sixth leg to a roundabout, the standard size needs to be increased because the added legs decrease the distance between the legs. This situation often creates overlap between entering and exiting vehicles. The solution is to increase the ICD of the roundabout to between 180' – 200' or to consider a design with more of an oval shaped roundabout by offsetting two larger ICD's. This is illustrated below, showing a design using two offset 180' ICD. This design has greater impacts to the surrounding area but increases the spacing between legs and also flatten some of the right turn angles. This is a common trade off that is seen with the more complex roundabouts.



Though this design will still need to go through more revisions to maximize the safety and efficiency of the roundabout while minimizing impacts to surrounding areas, the above example highlights the design process that Urban utilizes to customize modern roundabout design for each specific location.

LOCATION 2: PORCHTOWN ROAD (CR 613), UPPER NECK ROAD (CR 690) AND LAWRENCE CORNER ROAD (CR 621)

Location 2, also known as Lawrence Corner, is a five legged intersection. Three of the five legs are stop controlled with only stop signs and the other two legs (Porchtown Road) are uncontrolled. This intersection has one less leg than Location 1 but the skew of this intersection is much more severe. Below is a graphic that shows a 160' ICD centered within the existing intersection. As is illustrated, the severely skewed angles create overlap with some of the entrances and exits and also make right turns very difficult.

Resolving these undesirable conditions would also require a larger than normal sized ICD to create a greater space between legs. To help increase the distance between legs, it may also be necessary to realign some of the approaches. This is depicted in the graphic below shows a 180' ICD roundabout.

By realigning the two southern most approaches, the distance between legs is increased, the overlap is lessened and the right turn movements are more reasonable for larger vehicles. This design has greater impacts to the surrounding area, but is a common tradeoff for more complex roundabouts with more than four legs. Like the previous example, this design will also still need to go through more revisions to maximize the safety and efficiency of the roundabout while minimizing impacts to surrounding areas.

DELIVERABLES:

- Design Plans
  - 30% for Project Sponsor
  - 60% (by November 2019) to Local Aid/BEPR for CED Approval
- Stormwater Documents
  - 30% for Project Sponsor
  - 60% (by November 2019)
- Sections I and II of CED and concept plans (by November 2019)

TASK 4 – UTILITY COORDINATION

Successful identification, verification and timely relocation of overhead and underground utilities are vital for project success. Early coordination leads to prompt delivery of design documents and helps avoid unforeseen conflicts once construction begins. Urban has excellent relationships with NJ utility companies, working in regular partnership to deliver projects to construction. We can draw from lessons learned to avert potential problems.

Each utility company identified will subsequently be provided the preliminary base mapping, a proposed scope of work, and a request to indicate the type, size, material, and age of their facilities. Urban will also request from the utility companies any information regarding potential constraints that could affect the design, construction staging and/or construction scheduling such as seasonal outage restrictions, clearance requirements, easement and/or ROW requirements, long lead- time materials, and possible future build plans. This compiled information will become the Utility Master Plan. With a Utility Master Plan and a project footprint in place, utility impacts can be identified. The calculation of cost should be coupled to the determination of impacts. Subsurface Utility Engineering (SUE) will be performed as needed. The goal of these projects will be to avoid utility relocations. However, if relocations are required, the amount of utility work necessary will be minimized. In Final Design, Utility Agreement Plans, Specifications and Estimates will be developed in coordination with the utility owners and approved for construction.

Deliverables:

- Utility Agreement Plans

TASK 5 – ENVIRONMENTAL DOCUMENTATION/PERMITTING

Urban will assist SJTPO and the County to minimize project impacts consistent with regulatory standards and assess regulated impacts by site inspection, map plans, and report preparation. We will prepare Engineering Plans to depict the information for the CED assessment and permits. Urban will create a "Major Development" Assessment Plan identifying added impervious coverage, total disturbance, and relevant "watercourse" crossings as it relates to NJDEP and Flood Hazard jurisdiction, and will delineate wetlands, as applicable. We will investigate State and Federal Threatened and Endangered Species including coordinating with the Federal IPAC program to obtain an IPAC report, and investigate the State Landscape 3 version GIS database for State species, to be used for preparing the CED document.

Urban has handled cultural resource issues based on existing documented known historic sites, and the redevelopment of a previously developed site that customarily excludes archaeological studies. We can provide

the cultural resource "letter format" process for SJTPO to submit to the Agency for this effort. Our review shows that the project does not materially influence any parkland area.

Urban will prepare a draft CED document for the County to submit to the Agencies.. We will prepare an 8 ½ x11 inch Location Map on a USGS Topographic map and an Environmental Features Map to correlate with specific items within the CED language. Urban will assess NJDEP permits, prepare permit applications, and prepare a Soil Erosion and Sediment Control plan if required.

TASK 6 – ROW DOCUMENTATION

It is desirable to avoid Right-of-Way (ROW) takings with any proposed design, however to promote proper speeds, deflection, leg spacing and size with modern roundabouts, ROW takings may be necessary. It is our job to minimize these impacts while producing a viable design. The Urban/CCE team will help negotiate with property owners and utility companies to obtain the necessary easements. Due to the time frame to secure federal funding, if ROW is determined to be needed, we will immediately initiate the development of ROW documents.

Performing an Impact Assessment is critical. ROW impacts are a primary driver in determining solutions. Items such as the location of SWM basins, wells and septic tanks, construction staging areas, construction access, riparian rights, mitigation areas, driveway access, and other impacts associated with adjacent properties should be determined. ROW efforts will comply with the ROW Design Guidelines set by the County. Access issues require quick resolution so ROW acquisition can commence. Cost to obtain ROW and address access revisions in both time and dollars are balanced versus project benefit when determining the preferred alternative for advancement into Final Design (FD).

For ROW during PE, deeds and title searches will be performed, parcel impacts will be estimated including partial/full takes, slope, utilities, drainage, and construction easements. Special investigations associated with environmental constraints such as contamination, riparian grants, USTs, wells/septic systems are performed as necessary, and costs are further defined.

In FD, ROW Plans (IPMs) and Parcel Descriptions are developed, in accordance with the ROW Manuals, for use in the ROW acquisition process. Solutions to limit critical path impact include such as design exceptions to avoid impacts if there are no safety concerns will be considered

Deliverables:

- Parcel Maps
- Deed Descriptions
- Right of Entry Agreements

7 – Final Design (Contract Documents/PS&Es)

Urban will submit for review final design plans to Salem County, SJTPO and any other necessary agencies. Included with this submission will be a listing of non-standard items and areas that will require special provisions to be prepared.

Prepare Final Construction Plans

The final construction plans will include:

- Key Sheet
- Estimate-Distribution of Quantities
- Typical Sections
- Construction Plans
- Drainage/Grading Plans
- Environmental Plans
- Profiles
- Ties
- Traffic Control and Staging Plans
- Lighting Plans
- Traffic Signing and Striping Plans
- Method of Cross Sections
- Cross Sections
- Construction Details

Final PS&E

In addition to the final plans, specifications (including the federal bid requirements), and engineer's estimate, other documentation will be included, such as updated construction schedule, approved design exceptions, approved environmental documentation, certified permits, utility certification, calculations for all contract quantities and a designer's certification and Fact Sheet (to meet Local Aid requirements).

Specifications

Urban will prepare detailed specifications utilizing the appropriate Local Aid inputs, the latest Standard Inputs, the latest Baseline Document Changes (BDC) to the NJDOT 2007 Standard Specifications for Road and Bridge Construction.

Cost Estimates

The ability to accurately estimate construction costs, with consideration of current market conditions, is an essential component in the project's success. Urban's Cost Estimating Practice has performed pricing for projects in various stages of design, from conceptual to final. Urban utilizes a "contractor-type" approach for our detailed estimates, incorporating labor productivities, current material prices, and construction equipment rates suited to the project-specific site conditions and staging requirements. We understand and incorporate the cost impacts of work performed in active highway environments. The resulting cost estimate better predicts the real-world contractor bid.

Construction Schedule

A Critical Path Model (CPM) construction schedule will be prepared. Urban has a staff of certified professional schedulers with extensive experience in preparing schedules for construction projects in New Jersey.

Deliverables:

- Final Engineering Design Plans
- Construction Documents
- Stormwater Documents
- Other Needed Reports, Forms, and Permits

TASK 8 – BID CONSTRUCTION

Advertisement and Bidding

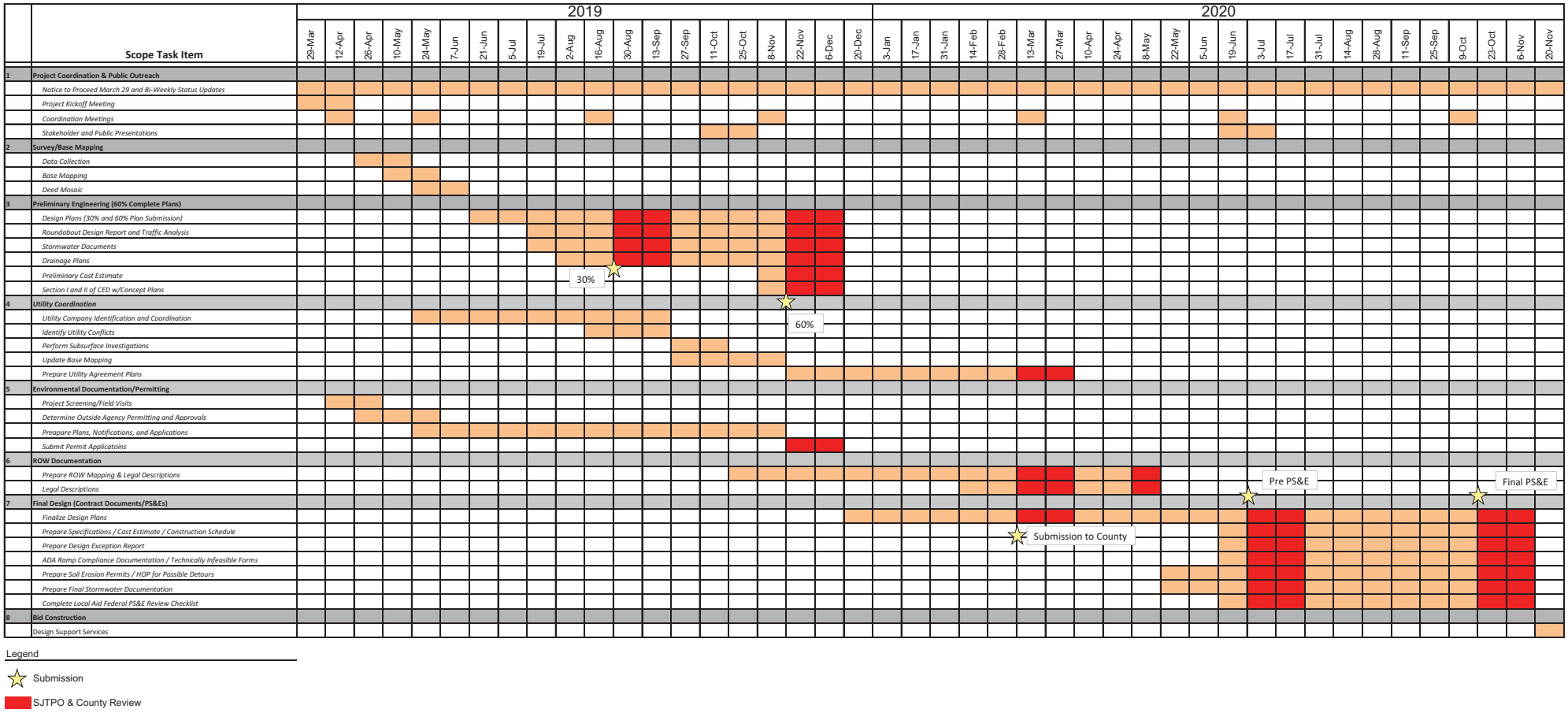
Urban will attend a pre-bid meeting, provide support to Salem County in response to prospective bidders' questions, and develop and issue any necessary addenda.

Analyze Construction Bids and Recommend Award

Urban will analyze bid proposals from the two apparent low bidders. We will review the bid packages to determine competitiveness in accordance with the most current procedures, and recommend award or rejection to the Salem County Engineer.

C. Project Schedule

SJTPO RFP: Local Safety Program Design Assistance
Project Schedule



D. Organization Chart

Local Safety Program Design Assistance

South Jersey Transportation Planning Organization and Salem County

Principal-In-Charge
Kenneth Fulmer, PE

Project Manager
Adam Brown, PE *

QA/QC Manager
William McGarrigel, PE

Roadway Design & Project Engineer
William Patton, PE*

Roundabout Review
Michael Mastaglio, PE, PTOE*

Stormwater Management & Environmental Permits
R. Bradley Tombs *

Traffic Analysis and Design
Scott Diehl, PE, PTOE*
Chris Burke PE, PTOE

Survey, Base Mapping, Right of Way
William Fahber, PLS *
Andrew Courson, PE, PLS (C)

Project Support

Public Involvement, Bicycle, Pedestrian
Erika Rush, PP, AICP

Utility Coordination and Plan Preparation
Laurel Welch, EIT

Cost Estimates
Keith Shuster, PSP

Constructability
Tom Kerins

Roadway Lighting
Rob Macioce, PE

Legend

** - Resume Included*
(C) - Churchill Consulting Engineers

Local Safety Program Design Assistance

Staffing Plan - Cost Proposal

Garden Road (CR 674), Parvin Mill Road (CR 645), and Alvine Road (CR 655)

PRELIMINARY ENGINEERING

Staff Name	Title	Direct Labor Wage	Approved Overhead Rate	Fixed Fee	Hours per Task								TOTAL (PE)	TOTAL COST (PE)
					Coordination & Public Outreach (PE)	Surveying/Base Mapping (PE)	Preliminary Engineering (60% Complete Plans)	Utility Coordination (PE)	ENV. Documentation/Permitting (PE)	ROW Documentation	Final Design (Contract Document/PS&E)	Bid Construction		
					1	2	3	4	5	6	7	8		
Urban Engineers, Inc.														
Scott Diehl	DEPARTMENT MANAGER		141.63%	24.0%	2	0	2	0	0	0	0	0	4	
Erika Rush	SENIOR MANAGER		141.63%	24.0%	38	0	0	0	0	0	0	0	38	
Adam Brown	PROJECT MANAGER		141.63%	24.0%	20	6	81	6	4	0	0	0	117	
William Patton	SENIOR ENGINEER		141.63%	24.0%	16	0	88	6	0	0	0	0	110	
R. Bradley Tombs	SENIOR ENGINEER		141.63%	24.0%	0	0	32	0	44	0	0	0	76	
Mike Mastaglio	SENIOR ENGINEER		141.63%	24.0%	0	0	16	0	0	0	0	0	16	
Chris Burke	SENIOR ENGINEER		141.63%	24.0%	0	0	16	0	0	0	0	0	16	
Bill Fahber	SENIOR ENGINEER		141.63%	24.0%	0	11	0	0	0	0	0	0	11	
Rob Macioce	PROJECT ENGINEER		141.63%	24.0%	0	0	40	0	0	0	0	0	40	
Jason Vopeleus	PROJECT ENGINEER		141.63%	24.0%	0	0	80	0	0	0	0	0	80	
Dane Greene	ENGINEER		141.63%	24.0%	0	0	0	24	0	0	0	0	24	
Laurel Welch	JUNIOR ENGINEER		141.63%	24.0%	0	0	80	0	0	0	0	0	80	
Direct Expenses														$222.50
Urban Engineers, Inc. Subtotal					**76**	**17**	**435**	**36**	**48**	**0**	**0**	**0**	**612**	**$87,444.21**
Churchill (DBE/ESBE Firm)														
Bill Fleming	PRJECT MANAGER		101.98%	21.0%	0	0	0	3	0	0	0	0	3	
Andrew Coursen	PROJECT SURVEYOR		101.98%	21.0%	0	8	0	0	0	0	0	0	8	
Luis Garcia	SEN. ENGINEER		101.98%	21.0%	0	0	0	15	0	0	0	0	15	
William Franklin	PARTY CHIEF		101.98%	21.0%	0	70	0	0	0	0	0	0	70	
Martin Caporelli	INSTRUMENT PERSON		101.98%	21.0%	0	70	0	0	0	0	0	0	70	
Michael Dorio	SURVEY COORD.		101.98%	21.0%	0	36	0	0	0	0	0	0	36	
Jeffery Kier	SR. CADD PERSON		101.98%	21.0%	0	24	0	0	0	0	0	0	24	
Jeffrey Hazzan	CADD PERSON		101.98%	21.0%	0	30	0	0	0	0	0	0	30	
Direct Expenses														$0.00
Churchill Subtotal					**0**	**238**	**0**	**18**	**0**	**0**	**0**	**0**	**256**	**$22,407.80**
Totals					**76**	**255**	**435**	**54**	**48**	**0**	**0**	**0**	**868**	**$109,852.00**

Local Safety Program Design Assistance

Staffing Plan - Cost Proposal

Garden Road (CR 674), Parvin Mill Road (CR 645), and Alvine Road (CR 655)

FINAL DESIGN

Staff Name	Title	Direct Labor Wage	Approved Overhead Rate	Fixed Fee	Hours per Task								TOTAL(FD)	TOTAL COST (FD)
					Coordination & Public Outreach (FD)	Surveying/Base Mapping (FD)	Preliminary Engineering (60% Complete Plans)	Utility Coordination (FD)	ENV. Documentation/Permitting (FD)	ROW Documentation (FD)	Final Design (Contract Documents/PS&E's)	Bid Construction		
					1	2	3	4	5	6	7	8		
Urban Engineers, Inc.														
Scott Diehl	DEPARTMENT MANAGER		141.63%	24.0%	2	0	0	0	0	0	0	0	2	
Erika Rush	SENIOR MANAGER		141.63%	24.0%	38	0	0	0	0	0	0	0	38	
Adam Brown	PROJECT MANAGER		141.63%	24.0%	20	2	0	2	1	2	75	20	122	
William Patton	SENIOR ENGINEER		141.63%	24.0%	16	0	0	2	0	0	87	0	105	
R. Bradley Tombs	SENIOR ENGINEER		141.63%	24.0%	0	0	0	0	39	0	80	0	119	
Mike Mastaglio	SENIOR ENGINEER		141.63%	24.0%	0	0	0	0	0	0	0	0	0	
Chris Burke	SENIOR ENGINEER		141.63%	24.0%	16	0	0	0	0	0	0	0	16	
Bill Fahber	SENIOR ENGINEER		141.63%	24.0%	0	5	0	0	0	10	0	0	15	
Rob Macioce	PROJECT ENGINEER		141.63%	24.0%	0	0	0	0	0	0	70	0	70	
Jason Vopeleus	PROJECT ENGINEER		141.63%	24.0%	0	0	0	0	0	0	250	0	250	
Dane Greene	ENGINEER		141.63%	24.0%	0	0	0	12	0	0	0	0	12	
Laurel Welch	JUNIOR ENGINEER		141.63%	24.0%	0	0	0	0	0	0	100	0	100	
Direct Expenses														$222.50
Urban Engineers, Inc. Subtotal					**92**	**7**	**0**	**16**	**40**	**12**	**662**	**20**	**849**	**$115,054.53**
Churchill (DBE/ESBE Firm)														
Bill Fleming	PRJECT MANAGER		101.98%	21.0%	0	0	0	0	0	0	0	0	0	
Andrew Coursen	PROJECT SURVEYOR		101.98%	21.0%	0	0	0	0	0	13	0	0	13	
Luis Garcia	SEN. ENGINEER		101.98%	21.0%	0	0	0	0	0	0	0	0	0	
William Franklin	PARTY CHIEF		101.98%	21.0%	0	0	0	0	0	0	0	0	0	
Martin Caporelli	INSTRUMENT PERSON		101.98%	21.0%	0	0	0	0	0	0	0	0	0	
Michael Dorio	SURVEY COORD.		101.98%	21.0%	0	0	0	0	0	25	0	0	25	
Jeffery Kier	SR. CADD PERSON		101.98%	21.0%	0	0	0	0	0	15	0	0	15	
Jeffrey Hazzan	CADD PERSON		101.98%	21.0%	0	0	0	0	0	20	0	0	20	
Direct Expenses														$1,500.00
Churchill Subtotal					**0**	**0**	**0**	**0**	**0**	**73**	**0**	**0**	**73**	**$9,156.46**
Totals					**92**	**7**	**0**	**16**	**40**	**85**	**662**	**20**	**922**	**$124,211.00**

Local Safety Program Design Assistance
Staffing Plan - Cost Proposal
Garden Road (CR 674), Parvin Mill Road (CR 645), and Alvine Road (CR 655)
Total Cost

Staff Name	Title	Direct Labor Wage	Approved Overhead Rate	Fixed Fee	Hours per Task								TOTAL	TOTAL COST	PERCENT OF TOTAL COST
					Coordination & Public Outreach	Surveying/Base Mapping	Preliminary Engineering (60% Complete Plans)	Utility Coordination	ENV. Documentation/Permitting	ROW Documentation	Final Design (Contract Documents/PS&E's)	Bid Construction			
					1	2	3	4	5	6	7	8			
Urban Engineers, Inc.															
Scott Diehl	DEPARTMENT MANAGER		141.63%	24.0%	4	0	2	0	0	0	0	0	6		
Erika Rush	SENIOR MANAGER		141.63%	24.0%	76	0	0	0	0	0	0	0	76		
Adam Brown	PROJECT MANAGER		141.63%	24.0%	40	8	81	8	5	2	75	20	239		
William Patton	SENIOR ENGINEER		141.63%	24.0%	32	0	88	8	0	0	87	0	215		
R. Bradley Tombs	SENIOR ENGINEER		141.63%	24.0%	0	0	32	0	83	0	80	0	195		
Mike Mastaglio	SENIOR ENGINEER		141.63%	24.0%	0	0	16	0	0	0	0	0	16		
Chris Burke	SENIOR ENGINEER		141.63%	24.0%	16	0	16	0	0	0	0	0	32		
Bill Fahber	SENIOR ENGINEER		141.63%	24.0%	0	16	0	0	0	10	0	0	26		86.51%
Rob Macioce	PROJECT ENGINEER		141.63%	24.0%	0	0	40	0	0	0	70	0	110		
Jason Vopeleus	PROJECT ENGINEER		141.63%	24.0%	0	0	80	0	0	0	250	0	330		
Dane Greene	ENGINEER		141.63%	24.0%	0	0	0	36	0	0	0	0	36		
Laurel Welch	JUNIOR ENGINEER		141.63%	24.0%	0	0	80	0	0	0	100	0	180		
Direct Expenses														$445.00	
Urban Engineers, Inc. Subtotal					**168**	**24**	**435**	**52**	**88**	**12**	**662**	**20**	**1461**	**$202,498.74**	
Churchill (DBE/ESBE Firm)															
Bill Fleming	PRJECT MANAGER		101.98%	21.0%	0	0	0	3	0	0	0	0	3		
Andrew Coursen	PROJECT SURVEYOR		101.98%	21.0%	0	8	0	0	0	13	0	0	21		
Luis Garcia	SEN. ENGINEER		101.98%	21.0%	0	0	0	15	0	0	0	0	15		
William Franklin	PARTY CHIEF		101.98%	21.0%	0	70	0	0	0	0	0	0	70		
Martin Caporelli	INSTRUMENT PERSON		101.98%	21.0%	0	70	0	0	0	0	0	0	70		
Michael Dorio	SURVEY COORD.		101.98%	21.0%	0	36	0	0	0	25	0	0	61		13.49%
Jeffery Kier	SR. CADD PERSON		101.98%	21.0%	0	24	0	0	0	15	0	0	39		
Jeffrey Hazzan	CADD PERSON		101.98%	21.0%	0	30	0	0	0	20	0	0	50		
Direct Expenses														$1,500.00	
Churchill Subtotal					**0**	**238**	**0**	**18**	**0**	**73**	**0**	**0**	**329**	**$31,564.26**	
Totals					**168**	**262**	**435**	**70**	**88**	**85**	**662**	**20**	**1790**	**$234,063.00**	**100.0%**

Notes:
Fixed Fee Calculated as DL * Fixed Fee%
DBE/ESBE (Churchill) Percentage = 12.45% of Total Cost

Local Safety Program Design Assistance

Total Cost Per Task - Cost Proposal

Garden Road (CR 674), Parvin Mill Road (CR 645), and Alvine Road (CR 655)

	Total Cost per Task							
	Coordination & Public Outreach	Surveying/Base Mapping	Preliminary Engineering (60% Complete Plans)	Utility Coordination	Environmental Documentation/Permitting	ROW Documentation	Final Design (Contract Documents/PS&E's)	Bid Construction
Company	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Urban Engineers, Inc.								
Direct Expenses			$445.74				$445.74	
Preliminary Engineering	$12,622.74	$2,298.89	$59,119.95	$4,432.94	$9,192.92	$0.00	$0.00	$0.00
Final Design	$15,053.78	$935.42	$0.00	$1,902.76	$7,764.90	$1,569.61	$85,039.07	$3,012.24
Totals (Prelim. Eng. + Final Design)	$27,676.52	$3,234.31	$59,119.95	$6,335.70	$16,957.82	$1,569.61	$85,039.07	$3,012.24
Churchill (DBE/ESBE Firm)								
Direct Expenses						$3,000.00		
Preliminary Engineering	$0.00	$20,521.38	$0.00	$1,886.41	$0.00	$0.00	$0.00	$0.00
Final Design	$0.00	$0.00	$0.00	$0.00	$0.00	$10,656.46	$0.00	$0.00
Totals (Prelim. Eng. + Final Design)	$0.00	$20,521.38	$0.00	$1,886.41	$0.00	$10,656.46	$0.00	$0.00
Totals (Preliminary Engineering)	$12,622.74	$22,820.28	$59,119.95	$6,319.35	$9,192.92	$0.00	$0.00	$0.00
Totals (Final Design)	$15,053.78	$935.42	$0.00	$1,902.76	$7,764.90	$12,226.07	$85,039.07	$3,012.24
Grand Totals (Prelim. Eng. + Final Design)	**$27,676.52**	**$23,755.70**	**$59,119.95**	**$8,222.11**	**$16,957.82**	**$12,226.07**	**$85,039.07**	**$3,012.24**

NOTE: Directs are included in Prelim. Engineering and/or Final Design so they are not double counted in Totals

Local Safety Program Design Assistance

Staffing Plan - Cost Proposal

Porchtown Road (CR 613), Upper Neck Road (CR 690), and Lawrence Corner Road (CR 621)

PRELIMINARY ENGINEERING

Staff Name	Title	Direct Labor Wage	Approved Overhead Rate	Fixed Fee	Hours per Task								TOTAL (PE)	TOTAL COST (PE)
					Coordination & Public Outreach (PE)	Surveying/Base Mapping (PE)	Preliminary Engineering (60% Complete Plans)	Utility Coordination (PE)	ENV. Documentation/Permitting (PE)	ROW Documentation	Final Design (Contract Document/PS&E)	Bid Construction		
					1	2	3	4	5	6	7	8		
Urban Engineers, Inc.														
Scott Diehl	DEPARTMENT MANAGER		141.63%	24.0%	2	0	2	0	0	0	0	0	4	
Erika Rush	SENIOR MANAGER		141.63%	24.0%	38	0	0	0	0	0	0	0	38	
Adam Brown	PROJECT MANAGER		141.63%	24.0%	20	6	81	6	4	0	0	0	117	
William Patton	SENIOR ENGINEER		141.63%	24.0%	16	0	89	6	0	0	0	0	111	
R. Bradley Tombs	SENIOR ENGINEER		141.63%	24.0%	0	0	32	0	44	0	0	0	76	
Mike Mastaglio	SENIOR ENGINEER		141.63%	24.0%	0	0	16	0	0	0	0	0	16	
Chris Burke	SENIOR ENGINEER		141.63%	24.0%	0	0	16	0	0	0	0	0	16	
Bill Fahber	SENIOR ENGINEER		141.63%	24.0%	0	11	0	0	0	0	0	0	11	
Rob Macioce	PROJECT ENGINEER		141.63%	24.0%	0	0	40	0	0	0	0	0	40	
Jason Vopeleus	PROJECT ENGINEER		141.63%	24.0%	0	0	80	0	0	0	0	0	80	
Dane Greene	ENGINEER		141.63%	24.0%	0	0	0	24	0	0	0	0	24	
Laurel Welch	JUNIOR ENGINEER		141.63%	24.0%	0	0	80	0	0	0	0	0	80	
Direct Expenses														$223.24
Urban Engineers, Inc. Subtotal					**76**	**17**	**436**	**36**	**48**	**0**	**0**	**0**	**613**	**$87,608.05**
Churchill (DBE/ESBE Firm)														
Bill Fleming	PRJECT MANAGER		101.98%	21.0%	0	0	0	2	0	0	0	0	2	
Andrew Coursen	PROJECT SURVEYOR		101.98%	21.0%	0	8	0	0	0	0	0	0	8	
Luis Garcia	SEN. ENGINEER		101.98%	21.0%	0	0	0	15	0	0	0	0	15	
William Franklin	PARTY CHIEF		101.98%	21.0%	0	50	0	0	0	0	0	0	50	
Martin Caporelli	INSTRUMENT PERSON		101.98%	21.0%	0	50	0	0	0	0	0	0	50	
Michael Dorio	SURVEY COORD.		101.98%	21.0%	0	25	0	0	0	0	0	0	25	
Jeffery Kier	SR. CADD PERSON		101.98%	21.0%	0	18	0	0	0	0	0	0	18	
Jeffrey Hazzan	CADD PERSON		101.98%	21.0%	0	24	0	0	0	0	0	0	24	
Direct Expenses														$0.00
Churchill Subtotal					**0**	**175**	**0**	**17**	**0**	**0**	**0**	**0**	**192**	**$16,942.33**
Totals					**76**	**192**	**436**	**53**	**48**	**0**	**0**	**0**	**805**	**$104,550.38**

Local Safety Program Design Assistance

Staffing Plan - Cost Proposal

Porchtown Road (CR 613), Upper Neck Road (CR 690), and Lawrence Corner Road (CR 621)

FINAL DESIGN

Staff Name	Title	Direct Labor Wage	Approved Overhead Rate	Fixed Fee	Hours per Task								TOTAL(FD)	TOTAL COST (FD)
					Coordination & Public Outreach (FD)	Surveying/Base Mapping (FD)	Preliminary Engineering (60% Complete Plans)	Utility Coordination (FD)	ENV. Documentation/Permitting (FD)	ROW Documentation (FD)	Final Design (Contract Documents/PS&E's)	Bid Construction		
					1	2	3	4	5	6	7	8		
Urban Engineers, Inc.														
Scott Diehl	DEPARTMENT MANAGER		141.63%	24.0%	2	0	0	0	0	0	0	0	2	
Erika Rush	SENIOR MANAGER		141.63%	24.0%	38	0	0	0	0	0	0	0	38	
Adam Brown	PROJECT MANAGER		141.63%	24.0%	20	2	0	2	1	2	75	20	122	
William Patton	SENIOR ENGINEER		141.63%	24.0%	16	0	0	2	0	0	88	0	106	
R. Bradley Tombs	SENIOR ENGINEER		141.63%	24.0%	0	0	0	0	39	0	80	0	119	
Mike Mastaglio	SENIOR ENGINEER		141.63%	24.0%	0	0	0	0	0	0	0	0	0	
Chris Burke	SENIOR ENGINEER		141.63%	24.0%	16	0	0	0	0	0	0	0	16	
Bill Fahber	SENIOR ENGINEER		141.63%	24.0%	0	5	0	0	0	10	0	0	15	
Rob Macioce	PROJECT ENGINEER		141.63%	24.0%	0	0	0	0	0	0	70	0	70	
Jason Vopeleus	PROJECT ENGINEER		141.63%	24.0%	0	0	0	0	0	0	250	0	250	
Dane Greene	ENGINEER		141.63%	24.0%	0	0	0	12	0	0	0	0	12	
Laurel Welch	JUNIOR ENGINEER		141.63%	24.0%	0	0	0	0	0	0	100	0	100	
Direct Expenses														$223.24
Urban Engineers, Inc. Subtotal					**92**	**7**	**0**	**16**	**40**	**12**	**663**	**20**	**850**	**$115,218.37**
Churchill (DBE/ESBE Firm)														
Bill Fleming	PRJECT MANAGER		101.98%	21.0%	0	0	0	0	0	0	0	0	0	
Andrew Coursen	PROJECT SURVEYOR		101.98%	21.0%	0	0	0	0	0	13	0	0	13	
Luis Garcia	SEN. ENGINEER		101.98%	21.0%	0	0	0	0	0	0	0	0	0	
William Franklin	PARTY CHIEF		101.98%	21.0%	0	0	0	0	0	0	0	0	0	
Martin Caporelli	INSTRUMENT PERSON		101.98%	21.0%	0	0	0	0	0	0	0	0	0	
Michael Dorio	SURVEY COORD.		101.98%	21.0%	0	0	0	0	0	25	0	0	25	
Jeffery Kier	SR. CADD PERSON		101.98%	21.0%	0	0	0	0	0	15	0	0	15	
Jeffrey Hazzan	CADD PERSON		101.98%	21.0%	0	0	0	0	0	20	0	0	20	
Direct Expenses														$1,500.00
Churchill Subtotal					**0**	**0**	**0**	**0**	**0**	**73**	**0**	**0**	**73**	**$9,156.46**
Totals					**92**	**7**	**0**	**16**	**40**	**85**	**663**	**20**	**923**	**$124,374.84**

Local Safety Program Design Assistance
Staffing Plan - Cost Proposal
Porchtown Road (CR 613), Upper Neck Road (CR 690), and Lawrence Corner Road (CR 621)
Total Cost

Staff Name	Title	Direct Labor Wage	Approved Overhead Rate	Fixed Fee	Hours per Task								TOTAL	TOTAL COST	PERCENT OF TOTAL COST
					Coordination & Public Outreach	Surveying/Base Mapping	Preliminary Engineering (60% Complete Plans)	Utility Coordination	ENV. Documentation/Permitting	ROW Documentation	Final Design (Contract Documents/PS&E's)	Bid Construction			
					1	2	3	4	5	6	7	8			
Urban Engineers, Inc.															
Scott Diehl	DEPARTMENT MANAGER		141.63%	24.0%	4	0	2	0	0	0	0	0	6		
Erika Rush	SENIOR MANAGER		141.63%	24.0%	76	0	0	0	0	0	0	0	76		
Adam Brown	PROJECT MANAGER		141.63%	24.0%	40	8	81	8	5	2	75	20	239		
William Patton	SENIOR ENGINEER		141.63%	24.0%	32	0	89	8	0	0	88	0	217		
R. Bradley Tombs	SENIOR ENGINEER		141.63%	24.0%	0	0	32	0	83	0	80	0	195		
Mike Mastaglio	SENIOR ENGINEER		141.63%	24.0%	0	0	16	0	0	0	0	0	16		
Chris Burke	SENIOR ENGINEER		141.63%	24.0%	16	0	16	0	0	0	0	0	32		
Bill Fahber	SENIOR ENGINEER		141.63%	24.0%	0	16	0	0	0	10	0	0	26		88.60%
Rob Macioce	PROJECT ENGINEER		141.63%	24.0%	0	0	40	0	0	0	70	0	110		
Jason Vopeleus	PROJECT ENGINEER		141.63%	24.0%	0	0	80	0	0	0	250	0	330		
Dane Greene	ENGINEER		141.63%	24.0%	0	0	0	36	0	0	0	0	36		
Laurel Welch	JUNIOR ENGINEER		141.63%	24.0%	0	0	80	0	0	0	100	0	180		
Direct Expenses														$446.48	
Urban Engineers, Inc. Subtotal					**168**	**24**	**436**	**52**	**88**	**12**	**663**	**20**	**1463**	**$202,826.42**	
Churchill (DBE/ESBE Firm)															
Bill Fleming	PRJECT MANAGER		101.98%	21.0%	0	0	0	2	0	0	0	0	2		
Andrew Coursen	PROJECT SURVEYOR		101.98%	21.0%	0	8	0	0	0	13	0	0	21		
Luis Garcia	SEN. ENGINEER		101.98%	21.0%	0	0	0	15	0	0	0	0	15		
William Franklin	PARTY CHIEF		101.98%	21.0%	0	50	0	0	0	0	0	0	50		
Martin Caporelli	INSTRUMENT PERSON		101.98%	21.0%	0	50	0	0	0	0	0	0	50		
Michael Dorio	SURVEY COORD.		101.98%	21.0%	0	25	0	0	0	25	0	0	50		11.40%
Jeffery Kier	SR. CADD PERSON		101.98%	21.0%	0	18	0	0	0	15	0	0	33		
Jeffrey Hazzan	CADD PERSON		101.98%	21.0%	0	24	0	0	0	20	0	0	44		
Direct Expenses														$1,500.00	
Churchill Subtotal					**0**	**175**	**0**	**17**	**0**	**73**	**0**	**0**	**265**	**$26,098.80**	
Totals					**168**	**199**	**436**	**69**	**88**	**85**	**663**	**20**	**1728**	**$228,925.21**	**100.0%**

Notes:
Fixed Fee Calculated as DL * Fixed Fee%
DBE/ESBE (Churchill) Percentage = 12.45% of Total Cost

Local Safety Program Design Assistance

Total Cost Per Task - Cost Proposal

Porchtown Road (CR 613), Upper Neck Road (CR 690), and Lawrence Corner Road (CR 621)

	Total Cost per Task							
	Coordination & Public Outreach	Surveying/Base Mapping	Preliminary Engineering (60% Complete Plans)	Utility Coordination	Environmental Documentation/Permitting	ROW Documentation	Final Design (Contract Documents/PS&E's)	Bid Construction
Company	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Urban Engineers, Inc.								
Direct Expenses			$445.74				$445.74	
Preliminary Engineering	$12,622.74	$2,298.89	$59,283.05	$4,432.94	$9,192.92	$0.00	$0.00	$0.00
Final Design	$15,053.78	$935.42	$0.00	$1,902.76	$7,764.90	$1,569.61	$85,202.16	$3,012.24
Totals (Prelim. Eng. + Final Design)	$27,676.52	$3,234.31	$59,283.05	$6,335.70	$16,957.82	$1,569.61	$85,202.16	$3,012.24
Churchill (DBE/ESBE Firm)								
Direct Expenses						$3,000.00		
Preliminary Engineering	$0.00	$15,216.47	$0.00	$1,725.87	$0.00	$0.00	$0.00	$0.00
Final Design	$0.00	$0.00	$0.00	$0.00	$0.00	$10,656.46	$0.00	$0.00
Totals (Prelim. Eng. + Final Design)	$0.00	$15,216.47	$0.00	$1,725.87	$0.00	$10,656.46	$0.00	$0.00
Totals (Preliminary Engineering)	$12,622.74	$17,515.36	$59,283.05	$6,158.80	$9,192.92	$0.00	$0.00	$0.00
Totals (Final Design)	$15,053.78	$935.42	$0.00	$1,902.76	$7,764.90	$12,226.07	$85,202.16	$3,012.24
Grand Totals (Prelim. Eng. + Final Design)	**$27,676.52**	**$18,450.78**	**$59,283.05**	**$8,061.57**	**$16,957.82**	**$12,226.07**	**$85,202.16**	**$3,012.24**

NOTE: Directs are included in Prelim. Engineering and/or Final Design so they are not double counted in Totals