



Preliminary Design of South Castell Avenue

Scope of Services

Exhibit A

The CITY of New Braunfels is preparing a preliminary design and streetscape plan for South Castell Avenue from Bridge Street to Business 35. The CITY intends this project to align with Envision New Braunfels to “promote a compact urban fabric that includes walkable streets, mixed use development, and high-quality public spaces and create new and special destinations and experiences that build on New Braunfels’ historic resources” and to support and further implement the vision identified and detailed in the South Castell Area Master Plan.

The specific goals of this project are:

- Linking catalytic convention site along South Castell Avenue to Downtown;
- Connect private spaces to the public realm;
- Improve drainage along South Castell Avenue;
- Improve walkability along South Castell Avenue;
- Determine future utility assignments along Castell Avenue;
- Create a downtown gateway;
- Create a public plaza (shared street) around the convention center; and
- Incorporate enhanced pedestrian-oriented amenities that promote walkability in the downtown area

It is understood the South Castell Avenue will be divided into approximately three, character zones along the corridor. These character zones will be preliminary defined as downtown, municipal (near convention center) and neighborhood mixed. Each character zone may have different design parameters.

It is understood that the ENGINEER will deliver conceptual layout options for urban design and landscaping elements, a schematic roadway design, a preliminary engineering report, a preliminary opinion of probable construction costs, and a standard for downtown streetscape based on South Castell Avenue.

Task 1 – Project Management

Task 1.1: Create a Project Work Plan

ENGINEER will prepare a Project Management Plan. This will provide a brief understanding of the project, highlight the project team members involved, and provide a milestone schedule that assigns target dates to each major project task.

Task 1.2: Kickoff Meeting

The ENGINEER will attend a project kickoff with key members of the project team to review the Project Work Plan and discuss the approach to the project. This on-site meeting will include a discussion of previous planning efforts, data collection, and project goals and objectives.

Task 1.3: Status Meetings and Invoicing

The ENGINEER will have regular monthly coordination calls or virtual meetings with the CITY throughout this project. It is anticipated that up to 8 coordination meetings will be held with 2 in-person. It is assumed that no coordination meetings will require travel unless planned in conjunction with other in person events. Meeting summaries will be submitted within 10 days. This task also includes monthly progress reports, invoices, and billings. All project information will be held on a Kimley-Horn maintained sharefile and will be accessible to the CITY.

Task 1.4: Data Needs Request

ENGINEER will create a data needs request that lists technical data and applicable documents. The CITY will be responsible for the collection and delivery of requested data.

Task 1 Deliverables:

- Project Work Plan, Meeting Notes
- Monthly Invoices and Project Reports
- Data Needs Memo

Task 2 – Engagement

Task 2.1. Corridor Walk

The ENGINEER will visit the corridor and businesses/residents along the corridor. The ENGINEER will notify the businesses/residents one week before they visit and will project an alternative means of contact through a specific stakeholder meeting. The ENGINEER will have a short questionnaire for the business to discuss as they interview.

Task 2.2. Community Events

The ENGINEER will attend one Community Events to solicit feedback for South Castell Avenue plan. It is anticipated this event will be existing events on Castell Avenue such as the Farmer's Market. It is anticipated this event will be held towards the end of the project. Two members of the South Castell Avenue Project Team will attend the Community Events.

Task 2.3. Meetings

The ENGINEER will attend up to two meetings with stakeholders. Up to two members of the South Castell Avenue Project Team will be in attendance at these meetings.

Task 2 Deliverables:

- Meeting attendance and notes

Task 3 – Data Collection and Analysis

Task 3.1: Topographic Survey

The ENGINEER and Subconsultant will provide a design survey for a portion of Castell Avenue in Comal County, Texas, between Bridge St. and Business 35. The Digital Terrain Model (DTM) shall be from right-of-way to right-of-way throughout the project. Recover and verify the right-of-way location throughout the project limits. The ENGINEER will contact utility companies with any ownership of utilities within the project limits. The ENGINEER will field collect all utilities including subsurface utilities if any.

- Recover Primary Project Control
 - Recover any existing control in the vicinity of the survey if available.
- Establish Secondary Control
 - Set additional secondary control points as needed to provide a field DTM of this project.
 - Horizontal values can be established with RTK or Conventional methods.
 - Vertical values shall be established with an auto or digital level.
- The DTM shall include a minimum of breaklines, roadway striping, edge of pavement or edge of gravel, top and bottom of bank, spot elevation and high and low points.
- Tie visible property corners.
 - Topo shots shall not exceed 750 feet from the instrument and distance between ground shots shall not exceed 75 feet.
- Tie in all drainage structures, defining break lines around each end of the culvert.
- Locate visible utilities within project limits. Utility alignments shall be included in cad files.

Task 3.2: Right-of-Way Recovery Survey

The ENGINEER and Subconsultant will enter existing centerline and right-of-way geometry into COGO and verify. The ENGINEER and Subconsultant will compare located corners, fences, and centerline found to the existing right-of-way documentation (if available).

Task 3.3: Subsurface Utility Engineering (SUE)

The ENGINEER will request completed SUE from the City and utilize in this project.

Task 3.3: Traffic

The ENGINEER will complete a conceptual analysis of traffic conditions. The analysis will identify crash locations in the corridor by type and severity of event and use this information to analyze those locations to identify inadequate sight distances.

Task 3.4 Drainage

The ENGINEER will prepare a drainage analysis for the South Castell Avenue corridor. The analysis will evaluate existing condition stormwater inundation within the corridor and recommend up to three potential proposed alternatives. The analysis will be performed using XPSWMM or similar one- and two-dimensional hydraulic model. The hydraulic study area will be between South Castell Avenue and the stormwater outfalls in the Comal River or Guadalupe River. The hydraulic model will consider storm sewer systems and overland flow within the study area.

The ENGINEER will delineate the watershed contributing flow to the hydraulic study area. The watershed delineation will be based on available record drawings provided by the Client, available on-ground survey information, and LIDAR data obtained from the Texas Natural Resources Information System (TNRIS). The ENGINEER will calculate the 2-, 10-, 25-, and 100-year peak flows associated with each drainage area using the SCS/NRCS Unit Hydrograph method in general accordance with the currently published City of New Braunfels Drainage and Erosion Control Design Manual. The ENGINEER will utilize NOAA Atlas 14 rainfall data. Storm sewer location, size, and flowlines for the hydraulic model will be based on available survey information, site observations, and record drawings. The two-dimensional surface will be based on available on-ground survey information and TNRIS LIDAR data. The results of the model will be used to identify existing overflow paths and flow rates that occur in the study area during the 2-, 10-, 25-, and 100-year storm events. The ENGINEER will prepare existing conditions inundation workmaps for the studied storm events.

The ENGINEER will modify the storm sewer and/or ground surface in the vicinity of the corridor to evaluate up to three proposed conceptual alternatives. The ENGINEER will receive Client approval of the proposed conceptual alternatives prior to beginning the proposed conditions modeling effort. Conceptual alternatives may include proposed storm sewer or ground modifications. The ENGINEER will prepare proposed conditions inundation workmaps for the studied storm events. The ENGINEER will compare the results of the existing and proposed condition models for the 100-year storm event to determine if the proposed improvements adversely affect offsite properties. Adverse impact is defined as an increase in ponding elevation outside of the right-of-way.

The ENGINEER will summarize the results of this task in a technical memorandum for submittal to the City of New Braunfels. The memorandum will include the following:

- Drainage Area Map
- Record Drawing Excerpts
- Hydrologic Calculations
- Hydraulic Workmap
- Digital Files

The ENGINEER will submit the technical memorandum to the City for review. The ENGINEER will respond to up to one round of reasonable and ordinary City comments as part of this task. Reasonable and ordinary are comments that are minor and corrective in nature and

do not alter the scope of work. Response to additional rounds of comments or submittal to additional review agencies will be performed as an additional service.

Task 3.5. Existing Landscaping Assessment

The ENGINEER will research the landscape heritage of downtown New Braunfels and identify important aspects related to how this landscape was used as an enhancement to the quality of life and connection to the land. Based on the survey collected in Task 1 and the Base Map developed in Task 5, ENGINEER will provide one technical assessment of the existing landscape constraints and features of the corridor to identify important relationships of the various landscape program related to the street and adjacent uses and opportunities for improvements that are not readily apparent.

Task 3.6. Existing Urban Design Assessment

The ENGINEER and Subconsultant will develop an understanding of the current state of the corridor including travel/bike lanes, parking, and parkway/sidewalk zone to establish a clear project limit of the public realm from back of curb to building face/limits of the right-of-way both sides of Castell Avenue.

The ENGINEER and Subconsultant will analyze existing conditions of the corridor including the following:

- Existing land uses and property ownership to identify “last foot” obstacles between the edge of ROW and building façade. Identify locations/varying conditions.
- Identify important connections to key buildings and/or public/open spaces along the corridor to identify public space design and potential programming opportunities.
- Existing trees, utilities, bus stops, landmarks, and other important features.

The ENGINEER and Subconsultant will conduct case study research/benchmark analysis of great streets (local/national/international) to explore possible design elements for the corridor and determine the appropriate scale of application for Castell Avenue.

Task 3 Deliverables:

- Survey for the use of base mapping production for one full scale schematic
- Traffic Memo
- Drainage Report
- Urban Design and Landscape Assessment

Task 4 – Urban Design and Landscape Architecture Elements

Task 4.1. Develop Vision and Goals

The ENGINEER and Subconsultant will engage with project stakeholders, business owners along the corridor, and the broader public to understand shared goals and aspirations for the corridor to articulate a vision for the corridor including the following:

- Project mission statement
- Guiding design principles
- Project goals/desired outcomes
- Aspirational precedent imagery and narrative

Task 4.2. Urban Design

The ENGINEER and Subconsultant will develop the design elements for the corridor including the following:

- Define major character zones through narrative and precedent imagery.
- Develop design elements for each character zone which may include:
 - Mid-block/typical segment
 - Nodes/gateways/intersections
 - Plaza/enlarged plans of key areas
 - Parking bulb outs
- Develop the palette for the streetscape including gateway elements, paving/hardscape, pedestrian and street lighting, signage, wayfinding, banners, public art, and street furniture.
- Develop cross sections of each character zone to articulate the dimensions and materiality of the parkway/sidewalk zone segment of the streetscape.
- Provide up to three (3) landscape architecture sections/thumbnailed sketches showing various illustrative details and images for each district
- Develop eye level renderings (3) of each character zone.

Task 4 Deliverables

- Vision Statement,
- Design layouts for landscape architecture
- Three renderings

Task 5 – Schematic

Task 5.1. Data Collection and Base Mapping

The ENGINEER will request and review all record drawings and site development plans. The ENGINEER will map and verify existing utilities that were obtained during the Task 3.1 Survey and Task 3.2 SUE. A base map will be created identifying topography, estimated right-of-way. The ENGINEER will perform a site visit to verify base map and to evaluate site and traffic characteristics, topography, utilities, and potential environmental issues.

Task 5.2. Vertical Profile.

The ENGINEER will design vertical profile utilizing applicable roadway design software.

Task 5.3. Horizontal Layout.

The ENGINEER will design preliminary horizontal roadway geometrics

Task 5.4 Utility Assignment

ENGINEER will utilize the CITY provided SUE (Task 3.3) and record drawings to show the location of existing utilities. The ENGINEER will coordinate with New Braunfels Electric to determine placement for the new underground duct bank and associated above ground transformers and ground boxes. The ENGINEER will prepare cross section and plan view exhibits showing the existing utilities and proposed locations of the new drainage utilities and relocated underground dry utilities in the Cross Sections described in Task 5.5.

Task 5.5. Cross Sections

The ENGINEER will prepare existing and proposed typical sections, including typical utility assignments. It is anticipated that three proposed typical sections will be utilized corresponding to the context zones identified in Task 4.

The ENGINEER will prepare preliminary cross sections at a spacing no less than 100 feet and at driveways and intersections. These cross-sections will show pavement and subgrade, right-of-way limits, side slopes, pavement cross-slopes, curbs, and sidewalks.

Task 5.7. Schematic.

The ENGINEER will prepare one 30% Preliminary Design Schematic roll plot. The preliminary design schematic will be limited to existing topography and utilities, horizontal alignments, vertical profile design, intersection horizontal alignments and profiles (where applicable), identified easements, roadway typical sections, existing and proposed right-of-way, existing and proposed pavement edges, proposed sidewalks, proposed lane striping, and proposed detention facilities. The schematic will incorporate the urban design and landscape elements outlined in Task 4. The schematic will illustrate the opportunities for landscaping and urban design features through label and hatching.

Task 5.8. Opinion of Probable Construction Cost.

The ENGINEER will provide a detailed opinion of probable costs per construction phase based on 30 percent schematic concept design drawings.

Task 5.9 Design Review Meeting

The ENGINEER will attend up to one (1) Design Review meetings for the 30% schematic roll plot. Prepare meeting minutes and distribute to project attendees. Prepare comment responses for comments received during design review submittals. Update and resubmit schematic based on comments received.

Task 5 Deliverables

- Two (2) copies and one (1) electronic copy of the 30% Preliminary Design Schematic roll plots at a scale of 1 inch = 50 feet
- Two (2) copies and one (1) electronic copy of the 30% Cross Sections
- One (1) copy and one (1) electronic copy of Opinions of Probable Construction Cost for 30% Preliminary Design Schematic

Task 6 – Preliminary Engineering Report

The ENGINEER will prepare a Preliminary Engineering Report (PER) for summary of the analysis (Task 3) and design elements (Task 4). This report will document the design decisions thorough the schematic development and identify potential project phasing. The ENGINEER will identify and coordinate with CITY for up to 5 short term and long-term project components. Engineer to include project descriptions, exhibit, and OPCC for up to 5 projects/phases in the PER. The Drainage portion of the PER will be a summary of the full drainage memorandum included in Task 3.4. –

Task 7 – Downtown Streetscape Design Standards

The ENGINEER will use Castell's downtown sections and landscape design element in Task 4 D to develop a standard streetscape design for downtown New Braunfels streets. This is anticipated to incorporate up to 12 details and include one page each for downtown section type. The overall document is anticipated to be eight to ten pages in length. The standards will include dimensions and a landscape palette and cover the follow three elements:

- Mid-block/typical segment
- Nodes/gateways/intersections
- Parking bulb outs