

**Knoxville Energy and Sustainability Task Force**  
**Infrastructure Working Group Deliverables**

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**Objective:** To evaluate impacts of current City government practices, research, and recommend affordable and practical ways to incorporate sustainability into elements of ROW/street design.

**Working Group Scope** – within the areas elaborated below, the working group:

- evaluated environmental and economic impacts of current practices;
- identified and prioritized most effective areas for improvements;
- Analyzed and propose strategic and viable methods for incorporating sustainable design and/or operation standards into engineering practices.

**Recommendations for Improved ROW design to address:**

- Pavement width by street classification;
- Pavement materials;
- Insitu retention;
- Drainage ways design, location, etc.;
- Natural filtration prior to water entering storm water system;
- Size, material and placement of sidewalks, bike lanes/ways, etc.;
- Landscaping
- Utilities location and regulation of design standards for future repair and improvements

**Work Group Recommendations and Deliverables:**

1.) Subdivision Regulation Revision:

- work with MPC modify subdivision regulations to
  - reduce pavement width, as appropriate for street classification;
  - reconsider pavement sealing requirements;
  - modify curb requirements to aid with drainage design, location, filtration, retention in preparation for new stormwater regulations;

2.) Plantings in Right of Way:

- examine grass width and planting standards to allow for more flexibility in ROW stormwater filtration and mowing requirements (ie, landscaping with native species and allowing the uncut look to become accepted by the community);

3.) Multimodal in Right of Way:

- add additional traffic modes: bike lanes striped in ROW where possible, examine requesting sidewalks of developers;

4.) Utility Coordination in Right of Way:

- work closely with KUB during the design process to find suitable locations for utilities that minimize pavement and root disturbance and maximize ease of maintenance for utility work crews.

Examples:

1.) Drawings Provided for the following:

- a.) Local Streets:
- b.) Collector Streets:
- c.) Arterial Streets:

Our final product in the Work Plan will be as follows:

**Work Plan Chapter 4: Infrastructure (compiled and submitted by Group)**

- a. Paragraph explaining group intent / group goals
- b. Brief summary of pre-existing and current actions and narrative of the drawings
- c. 5-Year Plan: prioritize matrix actions based on importance and feasibility
- d. 8 to 10-Year Plan: prioritize matrix actions goals based on feasibility
- e. Matrices with proposed policies, in order of action, and drawings

**Notes on policy sheets and recommendations:**

**From Kelley Segars:**

I have concerns about the group that is working on road cross sections. I saw something that is proposing a sidepath--not bike lanes and sidewalks as it should be. I thought I'd heard that they weren't going to get too detailed and just stick to general principles, but I saw an actual cross section which is pretty detailed. Just would like to have some input and tell them why sidepaths are extremely dangerous.

**From Susan Edwards:**

I have shared the documents with several folks here, and we have several comments, which I'll summarize below. We can discuss further as needed.

**COK Collector drawing**

In looking at this drawing, we had several concerns, in particular with the location and utility easement sizes shown. For example, gas service is shown in a 3-foot easement, which should really be 5 feet at a minimum. That could be further impacted by the location of any bio-retention swales on the roadside. Any underground service locations (gas, water, wastewater and underground electric) must all factor in the ability to serve both sides of the street, which will at a minimum require enough ROW width to allow for a deeper pipe/conduit location (able to serve both sides of the street with long-side service lines coming under the street). For sewer, this is even more important, since the wastewater coming into the pipe must be able to flow by gravity. That means wastewater pipes must be located at a lower depth than the service lines connecting to them.

Bottom line, as we have said, our preference is to locate as much as possible outside the roadway to minimize pavement disruption for maintenance and repairs. However, the design of the drainage system can impact this considerably, and might even lead to a design solution that moves utilities back under the pavement (in cases where the alternative would be to locate services either extremely deep, or on both sides of the street to minimize issues with service lines crossing the roadway).

If you like, we would be glad to work with the author of the drawing to help reflect these concerns. It would help to know what software was used to draw it (Microstation? Autocad? Something else?).

**Utility Coordination in the ROW**

I'm also attaching redline edits of the recommendation regarding utilities in the ROW. The biggest change here is to change all references to "KUB" to be "area utilities," since KUB is not the only utility serving City residents, and the document refers to telecommunications services as well, which we don't provide. Also, I think there are some typos in here - assume someone will be spellchecking everything before we publish?

**Plantings in the ROW**

We had only minor changes regarding the Plantings in the ROW document, related to the need to coordinate plantings with the location of underground and overhead utility services:

Trey's Documents

Regarding the documents you sent today (Trey's documents), I would suggest adding the following language to the Utilities bullet (currently blank):

"Utilities: Roadway design and construction should be coordinated with utilities to minimize conflicts between utility mains/conduits/poles/service lines and the new proposed drainage and planting standards. In particular, utilities should be consulted with regard to easement width and location, and contractors should be instructed in proper planting methods (including selecting the right trees and planting them away from underground or overhead utility lines). "

I would also add utility poles to the landscaping section:

"The locations of street trees must be coordinated with the street lights, utility poles, and underground utilities."

Other thoughts (not necessarily utility related....) - this document recommends an 18 foot paved roadway, which may not be the same as recent recommendations from the Ridgetop task force (20 feet?). Don't know if that's a concern or not. And the comments regarding the purpose of curbs/preference for sheet drainage off streets may need to acknowledge that this may not be the same as what property owners currently expect (i.e., curbs are to help manage drainage, and that homeowners may not want their property used for drainage purposes). Maybe there's a need for education around these concepts??

We didn't make any specific suggestions about the drawing, since they are substantially the same issues we identified for the previous drawing.

We don't have any edits to the other documents.

Sorry for the lengthy e-mail; let me know if you have questions.

**Zane Foraker:**

I don't have a great deal to add to the discussion.

In the Subdivision Regulation Policy, under Taxpayer Benefit, we talk about the benefit of allowing development to go forward at reduced cost due to a list of factors.

Perhaps that space is also an opportunity to point out that if developers can save money on those items they could then be expected to spend that savings on truly beneficial items like sidewalks, bike lanes, better vegetation, etc...

**Susan Edwards:**

I think if the recommendations are going to lean heavily on the drawings (i.e., plan notes on the drawings), and less on the text of the recommendations, it would be good to get a little more specific about the location of other infrastructure, as you mention below (overflow stormwater pipes, cross drains, proper utility locations). We're glad to work with whoever gets this assignment as it relates to utilities.

**Trey Benefield:**

In answer to your questions, the heavy line at the bottom of the section simply represents the earth below.

As far as drainage from the swale: The water can be handled any of several different ways depending on the site and the project. In some cases, it will go into on-site detention; other times, we may not need a swale at all and it might sheet flow. In any event, this concept would almost never need a storm sewer for overflow (swales carry a lot of water and can be sized accordingly). This is not to say that the water might not eventually end up in a storm sewer downstream.

**Wayne Blasius:**

Please see my comments below:

**General/Subdivision Recs:**

I hope that our final plan can state it's goals and vision in a way that excites people about the possibilities;

**Benefit to taxpayers:**

this sounds more like benefit to the buyer. Only those who buy property in a development done under these standards stands to enjoy these savings;

we could note that smaller streets, and less-engineered drainage systems can save taxpayers money on future repairs; water and air pollution reductions could save City, and therefore taxpayers, on fines or loss of funding due to non-attainment; cleaner water and reduced runoff saves money for 'downstream' tax payers - even if not in COK.

**Local Streets:**

on sketch- what is the heavy/solid line at bottom of section?

would water drain via the swale to on-site retention, with overflow? If storm sewer is needed for overflow, we should show it;

**Collector Streets:**

does water flowing to the non-swale side of street get piped to swale drain at periodic intervals? If so, we should show it;

since we identified several existing collectors and arterials without curb/gutter, do we want to address times when a curb is not needed? And if so, can that be defined? If not, we could say something like "curb optional, depending on conditions...."

is it possible to do a narrative, like Trey's 'draft,' that addresses all of the elements we outlined, with respect to the collector design? (see notes from 9-2-10 mtg)

**Arterial Streets:**

is it possible to do a narrative, like Trey's 'draft,' that addresses all of the elements we outlined, with respect to the arterial design? (see notes from 9-2-10 mtg)

Misc: Do you (all) think we should add plan notes to address each of the design elements to each of the three illustrations, or is it better to use a separate narrative (as Trey did)? Do we want to develop perspective illustrations like the Nashville study we reviewed, or stick with the 2-D plans and sections?