MEMO

TO: Eleni Churchill, CCMPO Transportation Planner

FROM: R. Chamberlin, PE/PTOE; M. Smith, PE

DATE: December 5, 2013

SUBJECT: Design Criteria for Street Alignment Alternatives, Railyard Enterprise Project.

This memorandum describes the engineering criteria to be implemented in the development of the Phase 2 transportation alternatives for the Railyard Enterprise Project.

These criteria will be consistent with VT Act 34, and subsequent City policy, which states:

> "Transportation projects and project phases managed by a municipality –including planning, development, construction, or maintenance –must consider "complete streets" principles, which are principles of safety and accommodation of all transportation system users, regardless of age, ability, or modal preference; except projects or project components involving unpaved highways."

Accordingly, and as suggested in Burlington City Complete Streets Guidance (v2.2.1) [1], we have developed the geometric parameters shown in Tables 1 through 3. Where necessary, some criteria may be modified in order to avoid existing structures, private property, and/or known sensitive resources.

Table 1 shows the basic criteria for all new streets. For each alternative the major connection between Battery and/or Champlain Street to Pine Street will be designed as a *Complete Street* (Table 2), and the other new minor streets will be designed using the *Slow Street* criteria (see Table 3).

TABLE 1. BASIC DESIGN CRITERIA FOR ALL NEW STREETS

Speed limit	25 mph
Design speed	25 mph
Curbing	yes
Curb radii	15'
Stopping sight distance	150'
Corner sight distance	275'
Horizontal centerline radius	200' min.,300' preferred

[1] http://www.burlingtonvt.gov/uploadedFiles/BurlingtonVTgov/Departments/DPW/Transportation/Policy_and_Planning/Complete-Streets-Reporting-v2.2.1-workingdraft.pdf

TABLE 2. DESIGN CRITERIA FOR COMPLETE STREETS

Vehicle lane	10-12'
Parking lane	yes, parrallel, 8'
Bike lanes	yes, 5' min, 6' adjacent to parking
Sidewalks	5' min, both sides
Tree belt	5' min
Street lighting	at gateways, intersections and other hi-ped areas

Figure 1 shows illustrative right-of-way cross-sections for a Complete Street, with and without on-street parking.

FIGURE 1: ILLUSTRATIVE COMPLETE STREET CROSS-SECTIONS

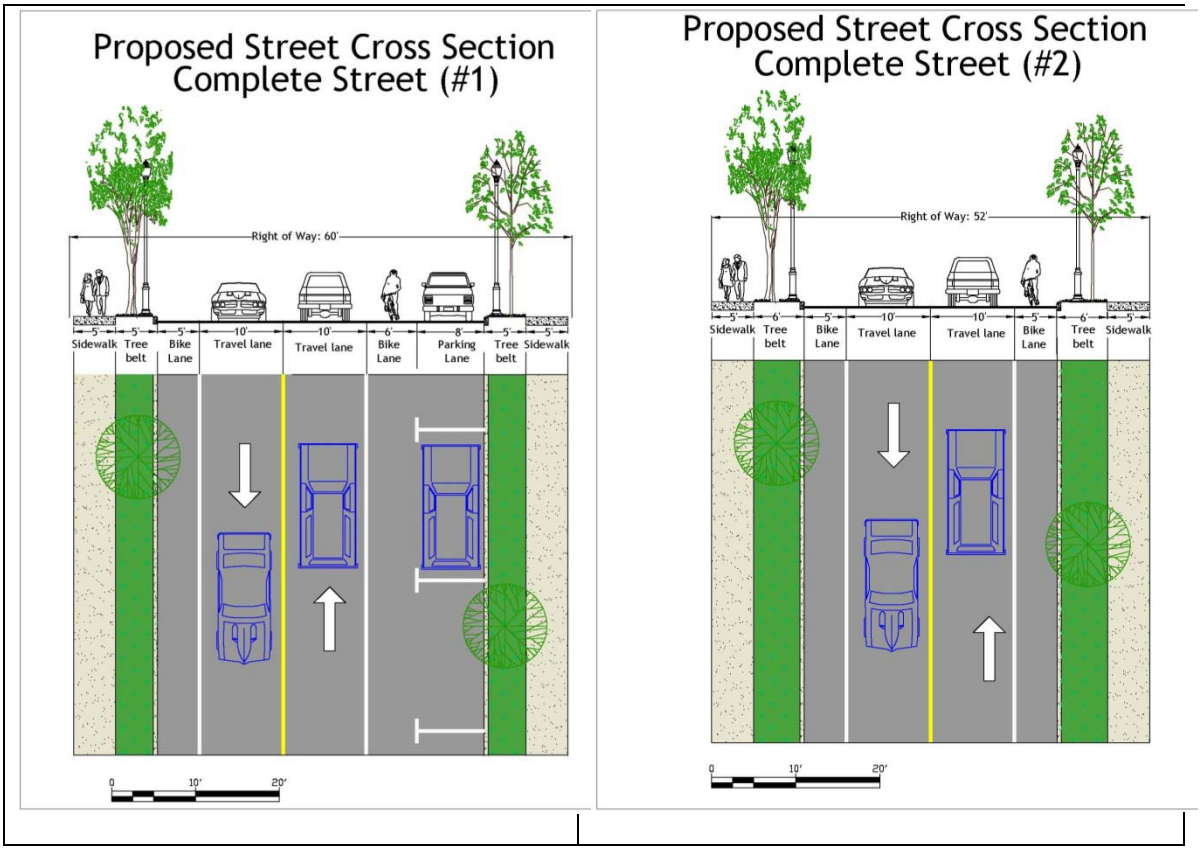

TABLE 3. DESIGN CRITERIA FOR SLOW STREETS

Vehicle lanes	12'
Parking lane	8'
Bike lanes	none, share the road
Sidewalks*	5-10'
Tree belts	5' min.
Street lighting	yes

*wider sidewalks will be provided in areas with anticipated high pedestrian activity

Figure 2 shows an illustrative right-of-way cross-section for a Slow Street, including on-street parking.

FIGURE 2: ILLUSTRATIVE SLOW STREET CROSS-SECTION

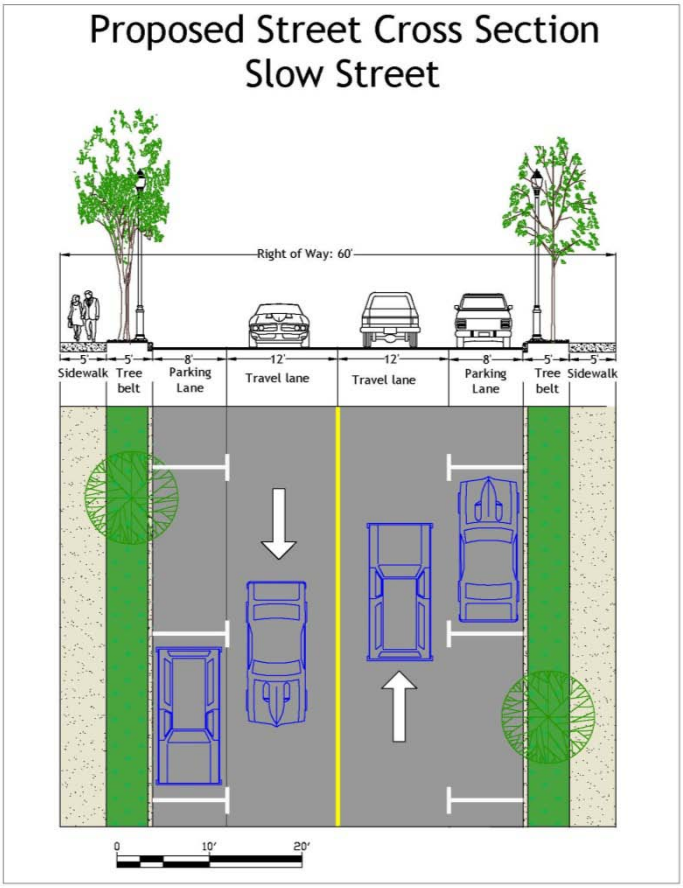

Figure 3 shows some examples of stormwater treatment and management methods suitable for use in public rights of way, as suggested in the *Street Design Guidelines – Burlington Transportation Plan.* "Silva Cells" refers to a method of directing surface stormwater runoff sub-surface through a medium of soil and gravel that filters pollutants and allows nutrient uptake by tree plantings. "Bioretention" generally refers to vegetated surface areas where surface runoff is diverted and treated through contact with vegetation and then redirected back to the street surface and/or collection system.

Other suitable treatment methods include larger subsurface gravel beds, separators or storage cells. Larger systems such as ponds or manufactured wetlands which will require areas outside the rights of way, may also be necessary. A combination of methods is likely necessary to ensure the right mix and degree of treatment is achieved for the project area.

FIGURE 3. EXAMPLE STORMWATER TREATMENT METHODS

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