

A

# APPENDIX A



# Level of Service

## Typical Cross Section Construction

### Basic Level of Service Capital / Operating and Maintenance

#### **CAPITAL**

**\$514.85 / lm**

#### **Amenity Zone**

Trees and Planters  
     Tree Deciduous 60mm Caliper  
     Planting Soil  
     Compacted Mulch  
 Softscape  
     Sod

#### **Pedestrian Clearway Zone**

Main Field  
     Poured In Place Concrete

#### **Frontage Zone**

Softscape  
     Sod  
     Planting Bed

#### **Illumination Elements**

Standard  
     Street Lighting

#### **OPERATING AND MAINTENANCE**

**\$14.72 / lm / yr**

#### **Continuity Strip Zone**

Spring Cleanup  
     Salt Strip Sweeping

#### **Amenity Zone**

Street Trees  
     Pruning  
     Mulching and Fertilization  
     Basic Root Pruning  
 Softscape  
     Lawn Mowing

#### **Pedestrian Clearway Zone**

Hardscape Concrete  
     Concrete Repairs  
 Snow  
     Snow Removal

#### **Frontage Zone**

Softscape  
     Shrub Bed Maintenance  
     Lawn Mowing

#### **Illumination Elements**

Street Lighting

## Standard Urban Level of Service Capital / Operating and Maintenance

### CAPITAL

*\$974.25 / lm*

#### Continuity Strip Zone

Hardscape

Poured In Place Concrete

#### Amenity Zone

Hardscape

Poured In Place Concrete

Trees and Planters

Tree Deciduous 60mm Caliper

Planting Soil

Raised Planter Curb

Perennials and Ornamental Grasses

#### Pedestrian Clearway Zone

Main Field

Poured In Place Concrete

#### Illumination Elements

Standard

Street Lighting

### OPERATING AND MAINTENANCE

*\$99.70 / lm / yr*

#### Continuity Strip Zone

Hardscape

Concrete Repairs

Spring Cleanup

Salt Strip Sweeping

Snow

Snow Removal

#### Amenity Zone

Hardscape Concrete

Concrete Repairs

Hardscape Planter Curb

Concrete Repairs

Snow

Snow Removal

Street Trees

Pruning

Watering

Mulching

Standard Root Pruning

Infiltration / Irrigation / Flushing

Softscape

Planter Watering / Maintenance

Ground Cover Trash Removal / Maintenance

#### Pedestrian Clearway Zone

Hardscape Concrete

Concrete Repairs

Snow

Snow Removal

#### Illumination Elements

Street Lighting

## Enhanced Level of Service Capital / Operating and Maintenance

**CAPITAL** **\$1,855.98 / lm**

### Continuity Strip Zone

Hardscape  
    Poured In Place Concrete

### Amenity Zone

Hardscape  
    Pre-Cast Concrete Unit Pavers on Concrete Base  
Trees and Planters  
    Tree Deciduous 80mm Caliper  
    Raised Planter Curb  
    Planting Soil  
    Perennials and Ornamental Grasses  
    Soil Cells  
Furniture  
    Bench  
    Trash Receptacle  
    Bicycle Stand  
    Branding Signage

### Pedestrian Clearway Zone

Main Field  
    Poured In Place Concrete

### Frontage Zone

Hardscape  
    Poured In Place Concrete

### Illumination Elements

Pedestrian Lighting  
Street and Pedestrian Lighting

**OPERATING AND MAINTENANCE** **\$152.28 / lm / yr**

### Continuity Strip Zone

Hardscape  
    Concrete Repairs  
Spring Cleanup  
    Salt Strip Sweeping  
Snow  
    Snow Removal

### Amenity Zone

Hardscape Unit Paving  
    Unit Paver Repairs  
    Concrete Base  
Hardscape Planter Curb  
    Concrete Planter Repairs  
Snow  
    Snow Removal  
Street Trees  
    Pruning  
    Watering  
    Mulching and Fertilization  
    Infiltration / Irrigation / Flushing  
Softscape  
    Planter Watering / Maintenance  
    Ground Cover Trash Removal / Maintenance  
    Trash Receptacle

### Pedestrian Clearway Zone

Hardscape Concrete  
    Concrete Repairs  
Snow  
    Snow Removal

### Frontage Zone

Hardscape Concrete  
    Concrete Repairs

### Illumination Elements

Typical Lighting  
    Pedestrian Lighting  
    Street / Pedestrian Combo Lighting

## Premium Level of Service Capital / Operating and Maintenance

### CAPITAL

*\$2,325.50 / lm*

#### Continuity Strip Zone

Hardscape

Poured In Place Concrete

#### Amenity Zone

Hardscape

Poured in Place Concrete

Natural Stone

Trees and Planters

Tree Deciduous 100mm Caliper

Raised Planter Curb

Planting Soil

Perennials and Ornamental Grasses

Soil Cells

Furniture

Bench

Trash Receptacle

Bicycle Stand

Branding Signage

#### Pedestrian Clearway Zone

Main Field

Pre-Cast Concrete Unit Pavers on Concrete Base

Paving Accent

Natural Stone

#### Frontage Zone

Hardscape

Poured In Place Concrete

#### Illumination Elements

Standard

Pedestrian Lighting

Street and Pedestrian Lighting

### OPERATING AND MAINTENANCE

*\$167.65 / lm / yr*

#### Continuity Strip Zone

Hardscape

Concrete Repairs

Spring Cleanup

Salt Strip Sweeping

Snow

Snow Removal

#### Amenity Zone

Hardscape Unit Paving

Unit Paver Repairs

Concrete Base

Hardscape Planter Curb

Concrete Planter Repairs

Snow

Snow Removal

Street Trees

Pruning

Watering

Mulching and Fertilization

Infiltration / Irrigation / Flushing

Softscape

Trash Receptacle

#### Pedestrian Clearway Zone

Hardscape Unit Paving (Main Field)

Unit Paver Repairs

Concrete Base

Hardscape Unit Paving (Accent Field)

Unit Paver Repairs

Concrete Base

Snow

Snow Removal

#### Frontage Zone

Hardscape Concrete

Concrete Repairs

#### Illumination Elements

Typical Lighting

Pedestrian Lighting

Street / Pedestrian Combo Lighting

## Low Cost Scenario Standard Urban Level of Service Capital / Operating and Maintenance

### CAPITAL

*\$966.25 / lm*

#### Continuity Strip Zone

Hardscape

Poured In Place Concrete

#### Amenity Zone

Hardscape

Poured In Place Concrete

Trees and Planters

Tree Deciduous 60mm Caliper

Planting Soil

Compacted Mulch

Tree Grate

#### Pedestrian Clearway Zone

Main Field

Poured In Place Concrete

#### Illumination Elements

Standard

Street Lighting

### OPERATING AND MAINTENANCE

*\$84.53 / lm / yr*

#### Continuity Strip Zone

Hardscape

Concrete Repairs

Spring Cleanup

Salt Strip Sweeping

Snow

Snow Removal

#### Amenity Zone

Hardscape Concrete

Concrete Repairs

Hardscape Planter Curb

Concrete Repairs

Snow

Snow Removal

Street Trees

Pruning

Watering

Mulching and Fertilization

Standard Root Pruning

Infiltration / Irrigation / Flushing

#### Pedestrian Clearway Zone

Hardscape Concrete

Concrete Repairs

Snow

Snow Removal

#### Illumination Elements

Street Lighting

**High Cost Scenario Standard Urban Level of Service  
Capital / Operating and Maintenance**

**CAPITAL**

*\$1,055.93 / lm*

Street Lighting

**Continuity Strip Zone**

Hardscape

Poured In Place Concrete

**Amenity Zone**

Hardscape

Poured In Place Concrete

Trees and Planters

Tree Deciduous 60mm Caliper

Raised Planter Curb

Planting Soil

Perennials and Ornamental Grasses

Furniture

Bench

Trash Receptacle

**Pedestrian Clearway Zone**

Main Field

Poured In Place Concrete

**Illumination Elements**

Standard

**OPERATING AND MAINTENANCE**

*\$115.70 / lm / yr*

**Continuity Strip Zone**

Hardscape

Concrete Repairs

Spring Cleanup

Salt Strip Sweeping

Snow

Snow Removal

**Amenity Zone**

Hardscape Concrete

Concrete Repairs

Hardscape Planter Curb

Concrete Repairs

Snow

Snow Removal

Street Trees

Pruning

Watering

Mulching and Fertilization

Standard Root Pruning

Infiltration / Irrigation / Flushing

Softscape

Planter Watering / Maintenance

Ground Cover Trash Removal / Maintenance

Trash Receptacle

**Pedestrian Clearway Zone**

Hardscape Concrete

Concrete Repairs

Snow

Snow Removal

**Illumination Elements**

Street Lighting



# APPENDIX B

# Region of York Top Performing Street Tree Species

**Table B1: Top Performing Small Form (Hydro Acceptable) Species List**

Species Name	Native <sup>2</sup>	Characteristics
Shubert cherry ( <i>Prunus virginiana</i> 'Shubert') <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>• Very susceptible to black knot, requires annual pruning to control fungus</li> <li>• Prone to suckering from base of tree</li> </ul>
Ivory silk lilac ( <i>Syringa reticulata</i> )	No	<ul style="list-style-type: none"> <li>• Showy lilac-like blooms in early summer, followed by seed capsules that persist on the tree</li> <li>• Fairly pest and disease resistant</li> </ul>

**Table B2: Top Performing Full Form Species List**

Species Name	Native <sup>2</sup>	Characteristics
Silver maple ( <i>Acer saccharinum</i> ) <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>• Develops large crown, therefore plant in locations with adequate space</li> </ul>
Ohio Buckeye ( <i>Aesculus glabra</i> ) <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>• Showy flower spikes followed by seed husks covered in soft spines</li> <li>• Less susceptible to leaf scorch and leaf blotch than horsechestnut</li> </ul>
Horsechestnut ( <i>Aesculus hippocastanum</i> ) <sup>1</sup>	No	<ul style="list-style-type: none"> <li>• Showy flower spikes, less seed production than Ohio buckeye, seed husks covered in soft spines</li> <li>• Susceptible to leaf scorch and leaf blotch</li> </ul>
Honeylocust ( <i>Gleditsia triacanthos</i> var. <i>inermis</i> )	Yes	<ul style="list-style-type: none"> <li>• Small leaves provide a filtered shade</li> <li>• Can be susceptible to defoliation by leafhoppers</li> <li>• Acceptable cultivars for Regional roads include: Shademaster</li> </ul>
Kentucky coffee tree ( <i>Gymnocladus dioicus</i> ) <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>• Coarse branching structure, large double-compound leaves with small leaflets</li> <li>• Dioecious tree with male and female plants, male tree preferred</li> </ul>

Notes:

<sup>1</sup> Spring planting only

<sup>2</sup> A native tree is defined as a tree whose natural range is within Ontario and/or the northern U.S lake states.

# APPENDIX C

# Region of York Notable Street Tree Species for Select Planting Sites

**Table C1: Notable Small Form (Hydro Acceptable) Species List**

Species Name	Native <sup>2</sup>	Characteristics
Hedge maple ( <i>Acer campestre</i> )	No	<ul style="list-style-type: none"> <li>Sensitive to desiccation from winter winds. Use in locations sheltered from prevailing winds.</li> </ul>
Ornamental pear ( <i>Pyrus calleryana</i> ) <sup>1</sup>	No	<ul style="list-style-type: none"> <li>Sensitive to desiccation from winter winds. Use in locations sheltered from prevailing winds. Acceptable cultivars for Regional roads include: Chanticleer Pear</li> </ul>
Columnar Norway maple ( <i>Acer platanoides</i> 'Columnare')	No Invasive	<ul style="list-style-type: none"> <li>Species suitable for planting adjacent to overhead hydro due to its narrow width. Must be planted a minimum of five (5) metres from overhead hydro</li> </ul>
English pyramidal oak ( <i>Quercus robur</i> 'fastigiata') <sup>1</sup>	No	<ul style="list-style-type: none"> <li>Species suitable for planting adjacent to overhead hydro due to its narrow width. Must be planted a minimum of five (5) metres from overhead hydro</li> <li>Should always be planted behind sidewalk / pedestrian zone</li> </ul>

Notes:

<sup>1</sup> Spring planting only

<sup>2</sup> A native tree is defined as a tree whose natural range is within Ontario and/or the northern U.S lake states.

Table C2: Notable Full Form Species List

Species Name	Native <sup>2</sup>	Characteristics
Norway maple ( <i>Acer platanoides</i> )	No Invasive	<ul style="list-style-type: none"> <li>Develops large crown, therefore plant in locations with adequate space.</li> <li>This species is invasive. Although some of the cultivars are less invasive, it is not to be planted near natural areas.</li> </ul>
Autumn Blaze maple ( <i>Acer x freemanii</i> 'Autumn Blaze') <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>Sensitive to desiccation from winter winds. Use in locations sheltered from prevailing winds.</li> </ul>
Hackberry ( <i>Celtis occidentalis</i> ) <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>Sensitive to de-icing salts (airborne spray). Use in locations where exposure to salt spray will be minimized, e.g. wide boulevards (6 m +) on the north and west sides of roads.</li> </ul>
Swamp white oak ( <i>Quercus bicolor</i> ) <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>Of the oak species, this has shown the greatest tolerance to Regional road conditions. Still considered sensitive to de-icing salts (airborne spray). Use in locations where exposure to salt spray will be minimized, e.g. wide boulevards (6 m+) on the north and west sides of roads.</li> </ul>
Bur oak ( <i>Quercus macrocarpa</i> ) <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>Has shown tolerance to Regional road conditions. Still considered sensitive to de-icing salts (airborne spray). Use in locations where exposure to salt spray will be minimized, e.g. wide boulevards (6 m+) on north and west sides of roads.</li> </ul>
Littleleaf linden ( <i>Tilia cordata</i> )	No	<ul style="list-style-type: none"> <li>Sensitive to desiccation from winter winds and de-icing salt. Plant in locations where exposure to salt spray will be minimized, e.g. wide boulevards (6 m+) on the north &amp; west sides of roads and in a location sheltered from prevailing winds.</li> <li>Acceptable cultivars for Regional roads include: Glenleven and Greenspire.</li> </ul>
Accolade elm ( <i>Ulmus japonica</i> x <i>Ulmus wilsoniana</i> )	No	<ul style="list-style-type: none"> <li>Initial plantings of this species have shown tolerance to the growing conditions on Regional road allowances. Experience with this species is limited and it should be used in limited quantities until further evaluation of its performance is completed.</li> </ul>

Table C2: Notable Full Form Species List (Cont'd)

Species Name	Native <sup>2</sup>	Characteristics
Colorado spruce (Picea pungens) <sup>1</sup>	No	<ul style="list-style-type: none"> <li>• Sensitive to desiccation from winter winds and de-icing salt. Plant a minimum of 6 m from edge of road, and preferably in a sheltered location.</li> <li>• Should always be planted behind sidewalk / pedestrian zone.</li> <li>• Susceptible to yellow-headed spruce sawfly defoliation.</li> </ul>
White spruce (Picea glauca) <sup>1</sup>	Yes	<ul style="list-style-type: none"> <li>• More sensitive to desiccation from winter winds and de-icing salt than Colorado or Norway spruces. Plant a minimum of 6 m from edge of road, and preferably in a sheltered location.</li> <li>• Can be susceptible to yellow-headed spruce sawfly defoliation.</li> </ul>
Norway spruce (Picea abies) <sup>1</sup>	No	<ul style="list-style-type: none"> <li>• Sensitive to desiccation from winter winds and de-icing salt. Plant a minimum of 6 m from edge of road, and preferably in a sheltered location.</li> <li>• Should always be planted behind sidewalk / pedestrian zone.</li> <li>• Fairly pest and disease resistant.</li> </ul>
Austrian pine (Pinus nigra) <sup>1</sup>	No	<ul style="list-style-type: none"> <li>• Sensitive to desiccation from winter winds and de-icing salt. Plant a minimum of 6 m from edge of road, and preferably in a sheltered location.</li> <li>• Should always be planted behind sidewalk / pedestrian zone.</li> <li>• Susceptible to Diplodia, blight, select locations with good air flow and avoid mass plantings of this tree.</li> </ul>

Notes:

<sup>1</sup> Spring planting only

<sup>2</sup> A native tree is defined as a tree whose natural range is within Ontario and/or the northern U.S lake states.

# APPENDIX D

# City of Vaughan Tree and Plant Species List

**Table D1: Coniferous Trees (WB typical)**

Species Name	Common Name	Size	Notes
<i>Abies alba</i>	Silver Fir	150 to 300cm ht.	
<i>Abies balsamea</i>	Balsam Fir	150 to 300cm ht.	
<i>Abies concolor</i>	White Fir	150 to 300cm ht.	
<i>Juniperus virginiana</i>	Eastern Red Cedar	150 to 300cm ht.	
<i>Larix laricina</i>	American Larch	150 to 300cm ht.	
<i>Picea abies</i>	Norway Spruce	150 to 300cm ht.	
<i>Picea glauca</i>	White Spruce	150 to 300cm ht.	
<i>Picea omorika</i>	Serbian Spruce	150 to 300cm ht.	
<i>Picea pungens</i>	Colorado Spruce	150 to 300cm ht.	(limit use due to Y.H. Sawfly)
<i>Picea pungens</i>	Colorado Blue Spruce	150 to 300cm ht.	(limit use due to Y.H. Sawfly)
<i>Picea pungens</i> 'Fat Albert'	Fat Albert Spruce	150 to 200cm ht.	
<i>Pinus nigra</i>	Austrian Pine	250cm ht.	(limit use due to Diploidia)
<i>Pinus resinosa</i>	Red Pine	175 to 300cm ht.	
<i>Pinus strobus</i>	Eastern White Pine	175 to 300cm ht.	
<i>Pinus sylvestris</i>	Scots Pine	200 to 300cm ht.	
<i>Pseudotsuga menziesii</i>	Douglas Fir	175 to 300cm ht.	
<i>Thuja occidentalis</i>	Eastern White Cedar	150 to 200cm ht.	
<i>Tsuga canadensis</i>	Eastern Hemlock	175 to 200cm ht.	limit to protected, moist loc.



Table D2: Deciduous Trees (60 mm cal WB typical)

Species Name	Common Name	Size	Notes
<i>Acer griseum</i>	Paperback Maple	50mm cal.	Sheltered location
<i>Acer platanoides</i> 'Columnar'	Columnar Maple	60mm cal. Typical	limit use
<i>Acer platanoides</i> 'Crimson King'	Crimson King Maple	60mm cal. Typical	limit use
<i>Acer platanoides</i> - 'Royal Red.'	Royal Red Maple	60mm cal. Typical	limit use
<i>Acer rubrum</i>	Red Maple	50 to 70mm cal.	avoid high pH, clay soils
<i>Acer rubrum</i> 'Autumn Spire'	Autumn Spire Maple	60mm cal. Typical	
<i>Acer rubrum</i> 'Karpick'	Karpick Maple	60mm cal. Typical	
<i>Acer rubrum</i> 'Red Sunset'	Red Sunset Maple	60mm cal. Typical	
<i>Acer saccharinum</i>	Silver Maple	60mm cal. Typical	
<i>Acer saccharum</i>	Sugar Maple	60mm cal. Typical	requires large root zone
<i>Acer spicatum</i>	Mountain Maple	200 cm ht.	
<i>Acer tataricum</i>	Tatarian Maple	60mm cal. Typical	
<i>Acer x freemanii</i>	Swamp Maple	60mm cal. Typical	avoid overplanting
<i>Acer x freemanii</i> 'Autumn Blaze'	Autumn Blaze Maple	60mm cal. Typical	
<i>Acer x freemanii</i> 'Firefall'	Firefall Maple	60mm cal. Typical	
<i>Acer x freemanii</i> 'Jeffersred'	Autumn Blaze Maple	60mm cal. Typical	
<i>Aesculus carnea</i> 'Briotii'	Red horse-chestnut	60mm cal. Typical	
<i>Aesculus glabra</i>	Ohio Buckeye	60mm cal. Typical	
<i>Aesculus hippocastanum</i>	Horse-chestnut	60mm cal. Typical	
<i>Aesculus hippocastanum</i> 'Baumannii'	Baumann's Horse Chestnut	60mm cal. Typical	
<i>Alnus incana</i> ssp. <i>Rugosa</i>	Speckled Alder	125cm ht.	
<i>Amelanchier canadensis</i>	Serviceberry	250cm ht. multi stem or 45 to 60mm cal	
<i>Amelanchier x grandiflora</i>	Serviceberry	45 to 60mm cal.	
<i>Amerlanchier arborea</i>	Downy Serviceberry	45 to 60mm cal.	

Table D2: Deciduous Trees (60 mm cal WB typical) (Cont'd)

Species Name	Common Name	Size	Notes
<i>Betula alleghaniensis</i>	Yellow Birch	50 to 60mm cal or could be multistem and by Ht. 250cm	
<i>Betula papyrifera</i>	Paper Birch	50 to 60mm cal	
<i>Carpinus betulus</i> 'fastigiata'	Pyramidal European Hornbeam	50 to 60mm cal	
<i>Carpinus caroliniana</i>	Blue Beech	50 to 60mm cal	
<i>Carya cordiformis</i>	Bitternut Hickory	or by 250cm ht.	
<i>Catalpa speciosa</i>	Northern Catalpa	60mm cal. Typical	
<i>Celtis occidentalis</i>	Hackberry	50 to 60mm cal	
<i>Cercidiphyllum japonicum</i>	Katsura	60mm cal. Typical	protected locations only
<i>Cercis canadensis</i>	Eastern Redbud	45 to 60mm cal	protected locations only
<i>Eucommia ulmoides</i>	Hardy rubber tree	60mm cal. Typical	
<i>Fagus grandiflora</i>	American Beech	60mm cal. Typical	
<i>Fagus sylvatica</i> "Dawyck Purple"	Dawyck Purple Beech	60mm cal. Typical	
<i>Ginkgo biloba</i>	Maidenhair Tree	60 to 70mm cal.	
<i>Gleditsia triacanthos inermis</i>	Thornless Honeylocust	60 to 80mm cal.	
<i>Gleditsia triacanthos inermis</i> 'Shademaster'	Shademaster Honeylocust	60 to 70mm cal.	
<i>Gleditsia triacanthos inermis</i> 'Skyline'	Skyline Honeylocust	60 to 70mm cal.	
<i>Gleditsia triacanthos</i> Var. <i>inermis</i> 'Ruby Lace'	Ruby Lace Honey Locust	60 to 70mm cal.	
<i>Gleditsia triacanthos</i> Var. <i>inermis</i> 'Suncole'	Suncole Honey Locust	60 to 70mm cal.	
<i>Gymnocladus dioica</i>	Kentucky Coffee Tree	60mm cal. Typical	
<i>Juglans nigra</i>	Black Walnut	60mm cal. Typical	
<i>Liriodendron tulipifera</i>	Tulip Tree	60mm cal. Typical	
<i>Malus</i> 'Royalty'	Royalty Crabapple	45 to 60mm cal	limit use
<i>Ostrya virginiana</i>	Ironwood/Hop Hornbeam	60mm cal. Typical	
<i>Plantanus occidentalis</i>	Sycamore	60mm cal. Typical	

Table D2: Deciduous Trees (60 mm cal WB typical) (Cont'd)

Species Name	Common Name	Size	Notes
Platanus acerfolia 'Bloodgood'	Bloodgood London Plane Tree	60mm cal. Typical	
Populus balsamifera	Balsam Poplar	45 to 60mm cal	
Populus nigra var Betulifolia 'Italica'	Lombardy Poplars	60mm cal. Typical	limit use
Populus grandidentata	Big-Toothed Aspen	60mm cal. Typical	
Populus tremuloides	Trembling Aspen	60mm cal. Typical	
Prunus serrulata 'Kwanzan'	Kwanzan Ornamental Cherry	45 to 60mm cal	
Pyrus calleryana 'Aristocrat'	Aristocrat Ornamental Pear	45 to 60mm cal	
Pyrus calleryana 'Chanticleer'	Chanticleer Pear	45 to 60mm cal	
Pyrus calleryana 'Glen's Form'	Glen's Form Ornamental Pear	45 to 60mm cal	
Pyrus calleryana 'Redspire'	Redspire Ornamental Pear	45 to 60mm cal	
Pyrus colleryano Capitol	Capitol Ornamental Pear	45 to 60mm cal	
Quercus alba	White Oak	60 to 70mm cal.	
Quercus bicolor	Swamp White Oak	60 to 70mm cal.	
Quercus macrocarpa	Bur Oak	60 to 70mm cal.	
Quercus palustris	Pin Oak	60 to 70mm cal.	avoid high pH, clay soils
Quercus robur	English Oak	60 to 70mm cal.	
Quercus robur 'Fastigiata'	Pyramidal English Oak	50 to 60mm cal.	
Quercus rubra	Red Oak	60 to 70mm cal.	
Salix alba 'Tristis'	Golden Weeping Willow	60mm cal. Typical	
Sorbus aucuparia	Mountain Ash	60mm cal. Typical	limit use- Fire blight
Syringa reticulota 'Ivory Silk'	Ivory Silk Tree Lilac	45 to 60mm cal	
Tilia americana	Basswood	60 to 80mm cal.	
Tilia americana 'Redmond'	Redmond Basswood	60mm cal. Typical	
Tilia cordata	Little Leaf Linden	60mm cal. Typical	
Tilia cordata 'Glenleven'	Glenleven Linden	60mm cal. Typical	
Tilia cordata 'Greenspire'	Greenspire Linden	60mm cal. Typical	
Ulmus americana cultivar 'Jefferson'	Jefferson Elm	60mm cal. Typical	
Ulmus 'pioneer'	Pioneer Elm	60mm cal. Typical	

Table D3: Shrubs (potted typical)			
Species Name	Common Name	Size	Notes
Amelanchier arborea	Downy Serviceberry	3 gal pot to 200cm ht WB	
Amelanchier canadensis	Serviceberry	3 gal pot to 200cm ht WB	
Amelanchier laevis	Alleghany Serviceberry	3 gal pot to 200cm ht WB	
Amelanchier x alnifolia	Saskatoon Serviceberry	3 gal pot to 200cm ht WB	
Berberis thunbergii 'Rose Glow'	Rose Glow Barberry	50 cm	
Comus sericea	Red Osier Dogwood	100cm ht typical but ranges from live stakes up	
Cornus alba 'Elegantissima'	Silver Edge Dogwood	80 to 100 cm ht.	
Cornus alternifolia	Alternate-leaved Dogwood/ Pagoda	60 to 100cm ht.	
Cornus racemosa	Gray Dogwood	live stakes to 100cm ht.	
Euonymus elatus Coloratus	Dwarf Winged Burning Bush	50cm ht	avoid over-planting
Euonymus fortunei	Winter creeper	50cm spr.	
Euonymus fortunei 'Sarcocoxie'	Sarcocoxie Euonymus	60cm spr.	
Fothergilla major Mount Airy'	Mount Airy: Fothergilla	50cm spr.	
Hamamelis virginiana	Witch Hazel	3 gal. to 100cm ht.	
Hamamelis x intermedia 'Arnold's Promise'	Arnold's Promise Witch Hazel	3 gal. to 100cm ht.	
Hydrangea macrophylla 'Bialmer'	Endless Summer Hydrangea	50cm	
Juniperus x media 'Old Gold'	Old Gold Juniper	40 to 60 cm spr.	
Juniperus chinensis "var. sargentii Viridis"	Green Sargent Juniper	40 to 60 cm spr.	
Juniperus sabina 'Tamariscifolia'	Tamarix Juniper	40 to 60 cm spr.	
Juniperus squamata 'Holger'	Holger Juniper	40 to 60 cm spr.	
Juniperus x media 'Old Gold'	Old Gold Juniper	40 to 60 cm spr.	
Lindera benzoin	Spicebush	50cm ht.	
Myrica gale	Sweet Gale	50cm ht.	

Table D3: Shrubs (potted typical) (Cont'd)

Species Name	Common Name	Size	Notes
<i>Physocarpus opulifolius</i>	Common Ninebark	80cm ht.	
<i>Physocarpus opulifolius</i> "Dart's Gold"	Darts Gold Ninebark	80cm ht.	
<i>Pinus mugo</i> 'Pumilia	Dwarf Mugho Pine	60cm spr.	
<i>Potentilla fruticosa</i>	Shrub Cinquefoil	50 to 60cm ht.	
<i>Potentilla fruticosa</i> 'Red Ace'	Red Ace Potentilla	50 to 60cm ht.	
<i>Rhus aromatica</i>	Fragrant Sumac	1 gal to 60cm ht	
<i>Rhus typhina</i>	Staghorn Sumac	80 cm spr.	
<i>Ribes americanum</i>	Wild Black Currant	50cm ht.	
<i>Ribes aureum</i>	Golden Currant	3 gal.	
<i>Rosa woodsii</i>	Woods Rose	40cm ht.	
<i>Rubus odoratus</i>	Flowering Raspberry	2 gal	
<i>Salix bebbiana</i>	Bebbs Willow	live stakes to 80cm ht.	
<i>Salix discolor</i>	Pussy Willow	live stakes to 80cm ht.	
<i>Sambucus canadensis</i>	American Elder	50 to 80cm ht. (2-3 gal typical)	
<i>Spiraea alba</i>	Meadowsweet	2 gal	
<i>Spiraea bumalda</i> "Anthony Waterer"	Anthony Waterer Spirea	2 gal to 60 cm ht.	
<i>Spiraea japonica</i> 'Little Princess'	Little Princess Spirea	2 gal to 60 cm ht.	
<i>Spiraea nipponica</i> 'Snowmound'	Snowmound Spirea	2 gal to 60 cm ht.	
<i>Spiraea japonica</i> 'Goldflame'	Spirea Goldflame	2 gal to 60 cm ht.	
<i>Symphoricarpos albus</i>	Snowberry	2 gal to 60 cm ht.	
<i>Syringa reticulata</i>	Common Lilac ( 3 gal. pot)	3 gal	
<i>Taxus x media</i> 'Citation'	Citation Yew	50cm ht	well drained areas only
<i>Viburnum lentago</i>	Nannyberry	60 to 80 cm ht.	

<b>Table D4: Perennials</b> (1 gal typical except in the case of naturalization and for larger impact use of 2 gal)			
<b>Species Name</b>	<b>Common Name</b>	<b>Size</b>	<b>Notes</b>
<i>Acorus gramineus</i> 'Oborozuki'	Sweet Flag	4" pot to 1 gal	
<i>Allium aflatunense</i>	Flowering Onion BULB	blub or potted depending on season	
<i>Asclepias incarnata</i>	Swamp Milkweed	4" pot to 1 gal	
<i>Aster cordifolius</i>	Heart-Leaved Aster	4" pot to 1 gal	
<i>Aster Novae-angliae</i>	New England Aster	4" pot to 1 gal	
<i>Bouteloua gracilis</i>	Mosquito Grass	4" pot to 1 gal	
<i>Calamagrostis acutiflora</i>	Feather Reed Grass	1 gal typical	
<i>Calamagrostis acutiflora</i> 'Karl Foerster'	Karl Foerster Feather Reed Grass	1 gal typical	
<i>Calamagrostis brachytricha</i>	Korean Feather Reed Grass	1 gal typical	
<i>Calamagrostis canadensis</i>	Canada Bluejoint Grass	1 gal typical	
<i>Calamagrostis x acutiflora</i> 'Overdam'	Variegated Reed Grass	1 gal typical	
<i>Calamagrostis x acutifolia</i> 'Karl Foerster'	Feather Reed Grass	1 gal typical	
<i>Calamoqrostis x ocutifolio Stricto'</i>	Feather Reed Grass	1 gal typical	
<i>Campanula carpatica</i>	Carpathian bellflower	4" pot to 1 gal	
<i>Carex greyi</i>	Morning Star Sedge	4" pot to 1 gal	
<i>Carex muskingumensis</i>	Palm Sedge Grass	4" pot to 1 gal	
<i>Carex pensylvanica</i>	Pennsylvania Sedge	4" pot to 1 gal	
<i>Carex stricta</i>	Tussock Sedge	4" pot to 1 gal	
<i>Carex vulpinoidea</i>	Fox Sedge	4" pot to 1 gal	
<i>Deschampsia cespitosa</i>	Tufted Hair Grass	1 gal typical	
<i>Echinachea</i> or <i>Rudbeckia</i>	Little Angel Coneflower	1 gal typical	
<i>Eupatorium</i>	Spotted Joe Pye Weed	4" pot to 1 gal	
<i>Eupatorium maculatum</i>	Joe Pye Weed	4" pot to 1 gal	
<i>Festuca cinerea</i> "Elijah Blue"	Elijah Blue fescue	1 gal typical	
<i>Festuca glauca</i> 'Boulder Blue"	Boulder Blue Fescue	1 gal typical	
<i>Geranium maculatum</i>	Wood Geranium	4" pot to 1 gal	
<i>Glyceria Striata</i> / Fowl Manna Grass	Fowl Manna Grass	4" pot to 1 gal	

<b>Table D4: Perennials (Cont'd)</b>			
<b>(1 gal typical except in the case of naturalization and for larger impact use of 2 gal)</b>			
<b>Species Name</b>	<b>Common Name</b>	<b>Size</b>	<b>Notes</b>
Helictotrichon "Sapphire"	Sapphire Blue Oat Grass	1 gal typical	
Hemerocallis	Daylily	1 gal typical	
Hemerocallis 'Magnificent Rainbow'	Magnificent Rainbow Daylily	1 gal typical	
Hemerocallis 'Stella D'Oro'	Stella D'oro Daylily	1 gal typical	
Hemerocallis 'fulva'	Tawny Daylily	1 gal typical	
Hosta 'Hadspen Blue'	Hadspen Blue Hosta	1 gal typical	
Hosta 'Sum and Substance'	Sum and Substance Hosta	1 gal typical	
Hypericum ascyron	Great St.John's Wort	1 gal typical	
Imperata cylindrical 'Red Baron'	Japanese Blood Grass	1 gal typical	use with caution
Iris versicolor	Blue Flag Iris	4" pot to 1 gal	
Lavandula angustifolia 'Munstead strain'	Munstead Lavender	1 gal typical	use with caution
Liatris spicata	Dense Blazing Star	1 gal typical	
Lilium michiganense	Michigan Lily	4" pot	
Lobelia siphilitica	Blue Cardinal Flower	1 gal typical	
Matteucia struthiopteris	Ostrich Fern	1 gal typical	
Miscanthus sinensis 'pupurascens'	Flame Grass	1 gal typical	
Miscanthus sinensis 'Gracillimus'	Maiden grass	1 gal typical	
Monarda fistulosa	Wild Bee Balm	1 gal typical	use with caution- powdery mildew
Onoclea sensibilis	Sensitive Fern	1 gal typical	
Panicum virgatum	Switch Grass	1 gal typical	
Panicum virgatum 'Cloud Nine'	Cloud Nine Switch Grass	1 gal typical	
Panicum virgatum var	Red Switch Grass	1 gal typical	
Pennisetum alopecuroides	Fountain Grass	1 gal typical	
Perovskia atriplicifolia	Russian Sage	1 gal typical	
Festuca glauca 'Boulder Blue'	Boulder Blue Fescue	1 gal typical	
Perovskia atriplicifolia 'Little Spire'	Little Spire Russian Sage	1 gal typical	
Ratibida pinnata	Grey-headed Coneflower	1 gal typical	

<b>Table D4: Perennials (Cont'd)</b> <b>(1 gal typical except in the case of naturalization and for larger impact use of 2 gal)</b>			
<b>Species Name</b>	<b>Common Name</b>	<b>Size</b>	<b>Notes</b>
Rudbeckia fulgida 'Goldsturm'	Goldstrum Black Eyed Susan Coneflower	1 gal typical	
Rudbeckia hirta	Black Eyed Susan	1 gal typical	
Sagittaria latifolia	Common Arrowhead	plug or 4" pot	
Salvia verticillata 'Purple Rain'	Purple Rain Salvia	1 gal typical	
Schizachyrium (or Andropogon) scoparium	Little Bluestem	1 gal typical	
Scirpus validus	Soft-stemmed Bullrush	plug or 4" pot	
Sedum kamitschaticum	Russian Stonecrop	4" pot to 1 gal	
Sedum x 'Autumn Joy'	Autumn Joy Sedum	1 gal typical	
Solidago rigida	Stiff Goldenrod	plug or 4" pot	
Sparganium emersum	Green Bur-reed	plug or 4" pot	
Typha latifolia	Cattail	plug or 4" pot	
Verbena hastata	Blue Vervain	4" pot	
Vinca minor	Periwinkle	4" pot	
Viola sororia	Common Blue Violet	4" pot	



# APPENDIX E

# Salt and Drought Tolerant Species List

**Table E1: Large Deciduous Trees (Salt and Drought Tolerant)**

Species Name	Common Name	Native	Notes
<i>Ailanthus altissima</i>	Tree of Heaven	no	Male clone
<i>Carya cordiformis</i>	Bitternut Hickory	yes	
<i>Catalpa speciosa</i>	Northern Catalpa	no	
<i>Corylus colurna</i>	Turkish Hazel	no	
<i>Eucommia ulmoides</i>	Hardy Rubber Tree	no	
<i>Ginkgo biloba</i>	Maidenhair Tree	no	
<i>Gleditsia triacanthos</i>	Honey Locust	no	
<i>Gymnocladus dioica</i>	Kentucky Coffeetree	yes	
<i>Juglans cinerea</i>	Butternut	yes	
<i>Juglans nigra</i>	Black Walnut	yes	
<i>Platanus occidentalis</i>	Sycamore	yes	
<i>Platanus x acerfolia</i>	London Plane Tree	no	
<i>Prunus serotina</i>	Black Cherry	yes	
<i>Quercus acutissima</i>	Sawtooth Oak	no	
<i>Quercus alba</i>	White Oak	yes	
<i>Quercus macrocarpa</i>	Bur Oak	yes	
<i>Quercus palustris</i>	Pin Oak	yes	
<i>Quercus robur</i>	English Oak	no	
<i>Quercus rubra</i>	Red Oak	yes	<i>Quercus rubra</i> (Northern Red Oak) may also be used
<i>Salix amygdaloides</i>	Peachleaf Willow	yes	
<i>Tilia cordata</i>	Little Leaf Linden	yes	
<i>Zelkova serrata</i>	Japanese Zelkova	no	

Table E2: Shrubs for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
<i>Amelanchier laevis</i>	Allegheny Serviceberry	yes	
<i>A. sanguinea</i>	Dwarf Juneberry	yes	
<i>A. spicata</i>	Shadbush Serviceberry	yes	
<i>A. x alnifolia</i>	Saskatoon Serviceberry	yes	
<i>Aronia melanocarpa</i>	Black Chokeberry	yes	
<i>Buxus</i>	Boxwood	no	
<i>Cephalanthus occidentalis</i>	Buttonbush	yes	
<i>Cornus foemina</i>	Gray Dogwood	yes	
<i>Cotoneaster</i>	Cotoneaster	no	
<i>Forsythia intermedia</i>	Forsythia	no	
<i>Hypericum kalmianum</i>	Shrubby St. Johns-Wort	yes	
<i>Juniperus communis</i>	Common Juniper	yes	
<i>Juniperus horizontalis</i>	Creeping Juniper	yes	
<i>Lindera benzoin</i>	Spicebush	yes	
<i>Mahonia aquifolium</i>	Oregon Grape	no	
<i>Myrica pensylvanica</i>	Bayberry	yes	
<i>Physocarpus opulifolius</i>	Eastern Ninebark	yes	
<i>Pinus mugo</i>	Mugo Pine	no	
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	yes	
<i>Prunus x cistena</i>	Purple-Leaf Sandcherry	no	
<i>Prunus pennsylvanica</i>	Pin Cherry	yes	
<i>Prunus pumila</i>	Sand Cherry	yes	
<i>Prunus virginiana</i>	Chokecherry	yes	
<i>Rhus aromatica</i>	Fragrant Sumac	yes	
<i>Rhus glabra</i>	Smooth Sumac	yes	
<i>Rhus typhina</i>	Staghorn Sumac	yes	
<i>Ribes alpinum</i>	Alpine Currant	no	
<i>Rosa rugosa</i>	Japanese Rose	no	Invasive, do not use within 100m of a natural area or Blue Street
<i>Rubus idaeus</i>	Red Raspberry	yes	
<i>Rubus odoratus</i>	Purple Flowering Raspberry	yes	

**Table E3: Shrubs for Roadside Planting (Salt and Drought Tolerant) (Cont'd)**

Species Name	Common Name	Native	Notes
<i>Salix discolor</i>	Pussy Willow	yes	
<i>Salix exigua</i>	Sandbar Willow	yes	
<i>Sambucus canadensis</i>	Elderberry	yes	
<i>Sambucus racemosa</i>	Red Elderberry	yes	
<i>Shepherdia canadensis</i>	Buffaloberry	yes	
<i>Spiraea japonica</i>	Japanese Spiraea	no	
<i>Symphoricarpos alba</i>	Western Snowberry	no	Invasive, do not use within 100m of a natural area or Blue Street
<i>Viburnum dentatum</i>	Arrowwood	yes	
<i>Viburnum rafinesquianum</i>	Downy Arrowwood	yes	

**Table E4: Groundcovers for Roadside Planting (Salt and Drought Tolerant)**

Species Name	Common Name	Native	Notes
<i>Ajuga</i>	Bugleweed	no	Invasive, do not use within 100m of a natural area or Blue Street
<i>Antennaria</i> spp.	Pussytoes	yes	
<i>Arctostaphylos uva-ursi</i>	Bearberry	yes	
<i>Cerastium arvense</i> ssp. <i>strictum</i>	Field Chickweed	yes	
<i>Cerastium tomentosum</i>	Snow-in-Summer	yes	
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	Common Strawberry	yes	
<i>Thymus serpyllum</i>	Mother-of-Thyme	no	Invasive, do not use within 100m of a natural area or Blue Street
<i>Waldsteinia fragarioides</i>	Barren Strawberry	yes	

Table E5: Perennials for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
<i>Achillea millefolium</i>	Common Yarrow	yes	
Agastache 'Black Adder'	Black Adder Hyssop	no	
Agastache rupestris	Orange Flare Hyssop	no	
<i>Alchemilla mollis</i>	Lady's Mantle	no	
<i>Aquilegia canadensis</i>	Wild Columbine	yes	
<i>Armeria maritima</i>	Sea Thrift	no	
<i>Artemisia schmidtiana</i>	Artemesia	no	
<i>Asclepias incarnata</i>	Swamp Milkweed	yes	
<i>Asclepias tuberosa</i>	Butterfly Milkweed	yes	
<i>Baptisia alba</i>	White Wild Indigo	no	
<i>Baptisia australis</i>	False Indigo	no	
<i>Bergenia</i>	Bergenia	no	
<i>Boltonia asteroides</i>	Boltonia, False Aster	no	
<i>Brunerra macrophylla</i>	Siberian Bugloss	no	
<i>Coreopsis lanceolata</i>	Lance-leaved Coreopsis	yes	
<i>Coreopsis rosea</i>	Pink-flowered Tickseed	no	
<i>Echinacea purpurea</i>	Eastern Purple Coneflower	no	
<i>Epilobium coloratum</i>	Purple-leaf Willow-herb	yes	
<i>Epimedium</i>	Barrenwort	no	
<i>Erigeron pulchellus</i>	Robin's Plantain Fleabane	yes	
<i>Eupatorium maculatum</i>	Joe Pye Weed	yes	
<i>Euthamia graminifolia</i>	Flat-top Goldentop	yes	
<i>Gaillardia aristata</i>	Great Blanket-flower	no	
Geranium 'Rozaanne'	Rozeanne Geranium	no	
<i>Geum triflorum</i>	Prairie Smoke	yes	
<i>Helianthus divaricatus</i>	Woodland Sunflower	yes	
<i>Helianthus strumosus</i>	Pale-leaf Sunflower	yes	
<i>Helianthus tuberosus</i>	Jerusalem Artichoke	yes	
<i>Heuchera 'Marmalade'</i>	Coralbells	no	
<i>Iberis sempervirens</i>	Candytuft	no	
<i>Lavandula angustifolia</i>	Lavender	no	

Table E6: Perennials for Roadside Planting (Salt and Drought Tolerant) (Cont'd)

Species Name	Common Name	Native	Notes
<i>Lespedeza capitata</i>	Round-head Bush-clover	yes	
<i>Leucanthemum</i>	Shasta Daisy	no	
<i>Lysimachia ciliata</i>	Fringed Loosestrife	yes	
<i>Monarda fistulosa</i>	Wild Bergamot, Bee-balm	yes	
<i>Nepeta racemosa</i>	Catmint	no	
<i>Opuntia fragilis</i>	Spreading Prickly-Pear	yes	
<i>Packera paupercula</i>	Balsam Ragwort	yes	
<i>Penstemon digitalis</i>	Foxglove, Beardtongue	yes	
<i>Potentilla anserina</i>	Silverweed	yes	
<i>Rudbeckia hirta</i>	Black-Eyed Susan	yes	
<i>Rudbeckia laciniata</i>	Green-Headed or Cut-leaf Coneflower	yes	
<i>Sedum spectabile</i>	Sedum	no	
<i>Sisyrinchium montanum</i>	Strict Blue-eyed-grass	yes	
<i>Solidago altissima</i>	Tall Goldenrod	yes	
<i>Solidago canadensis</i>	Canada Goldenrod	yes	
<i>Solidago flexicaulis</i>	Zig-zag Goldenrod	yes	
<i>Solidago nemoralis</i>	Grey Goldenrod	yes	
<i>Stachys byzantina</i>	Lambs' Ears	no	
<i>Symphotrichum cordifolium</i>	Heart-leaved Aster	yes	
<i>S. ericoides</i>	White Heath Aster	yes	
<i>S. lanceolatum</i>	Panicled Aster	yes	
<i>S. novae-angliae</i>	New England Aster	yes	
<i>S. oolentangiense</i>	Sky-blue Aster	yes	
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	yes	
<i>Trichostema brachiatum</i>	False Pennyroyal	yes	
<i>Verbena stricta</i>	Hoary Vervain	yes	
<i>Verbena urticifolia</i>	White Vervain	yes	
<i>Veronicastrum virginicum</i>	Culver's-root	yes	
<i>Yucca filamentosa</i>	Narrow-Leaved Yucca	no	
<i>Zizia aurea</i>	Common Alexanders	yes	

Table E7: Grasses and Sedges for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
<i>Andropogon gerardii</i>	Big Bluestem	yes	
<i>Bromus latiglumis</i>	Broad-glumed Brome	yes	
<i>Calamagrostis acutiflora</i> 'Karl Foerster'	Karl Foerster Feather Reed Grass	no	
<i>Carex atherodes</i>	Awned Sedge	yes	
<i>Carex brevior</i>	Brevior Sedge	yes	
<i>Carex pennsylvanica</i>	Pennsylvania Sedge	yes	
<i>Chasmanthium latifolium</i>	Northern Sea Oats	yes	
<i>Danthonia spicata</i>	Poverty Oatgrass	yes	
<i>Deschampsia caespitosa</i>	Tufted Hair Grass	yes	
<i>Elymus canadensis</i>	Canada Wild-rye	yes	
<i>Elymus riparius</i>	River Wild-rye	yes	
<i>Elymus virginicus</i>	Virginia Wild-rye	yes	
<i>Festuca cinerea</i> "Elijah Blue"	Elijah Blue Fescue	no	
<i>Festuca glauca</i> 'Boulder Blue'	Boulder Blue Fescue	no	
<i>Festuca ovina</i> 'Elijah Blue'	Elijah Blue Fescue	no	
<i>Helictotrichon sempervirens</i>	Blue Oat Grass	no	
<i>Juncus tenuis</i>	Path Rush	yes	
<i>Miscanthus sinensis</i> 'Gracillimus'	Maiden grass	no	Invasive, do not use within 100m of a natural area or Blue Street
<i>Miscanthus sinensis</i> 'pupurascens'	Flame Grass	no	Invasive, do not use within 100m of a natural area or Blue Street
<i>Miscanthus sinensis</i>	Morning Light	no	
'Morning Light'	Maiden Grass	no	Invasive, do not use within 100m of a natural area or Blue Street
<i>Muhlenbergia mexicana</i>	Mexican Muhly	yes	
<i>Schizachyrium scoparium</i>	Little Bluestem	yes	
<i>Scirpus cyperinus</i>	Cottongrass Bulrush	yes	
<i>Sorghastrum nutans</i>	Yellow Indian-grass	yes	
<i>Spartina pectinata</i>	Prairie Cordgrass	yes	
<i>Sporobolus neglectus</i>	Small Dropseed	yes	

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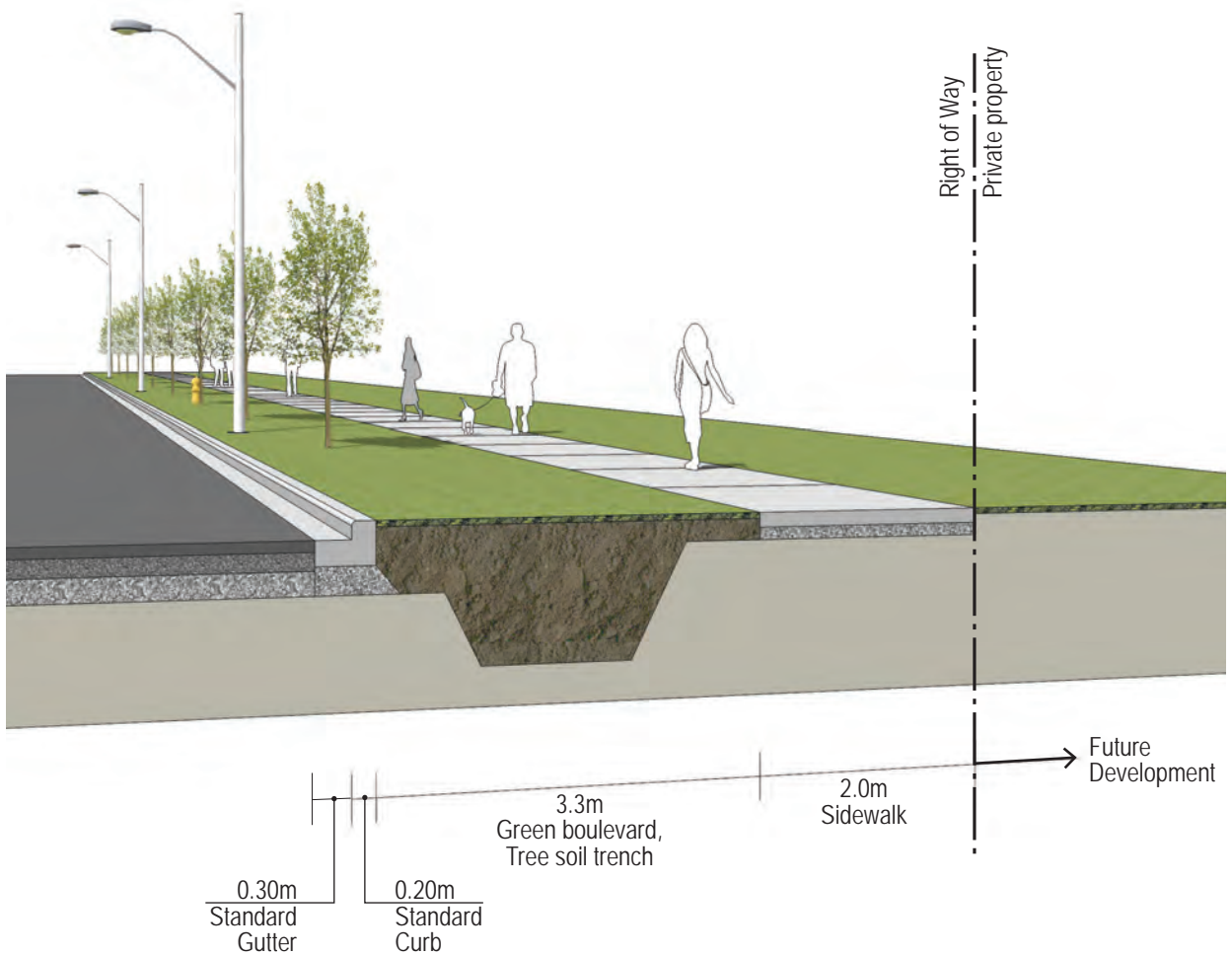


# APPENDIX F

# Streetscape Phasing Option

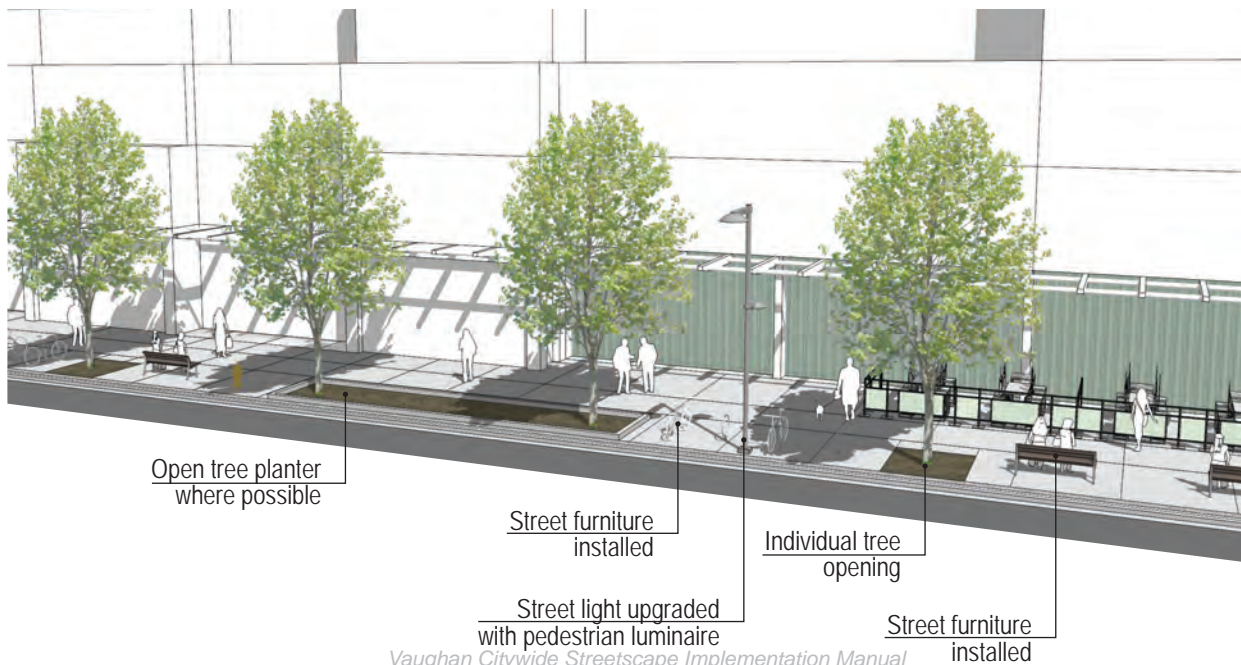
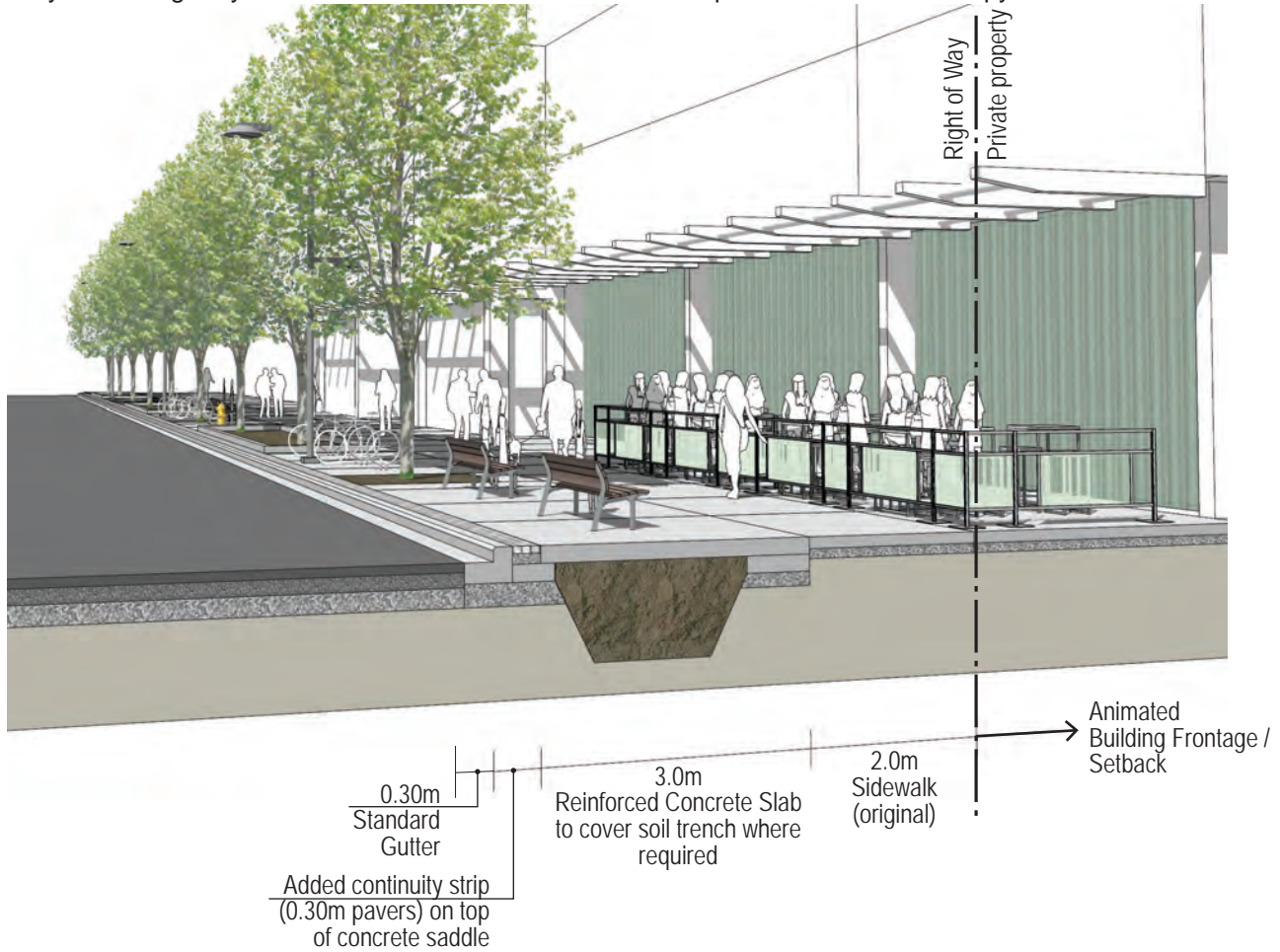
## Initial Streetscape

When and where required, a phased approach will allow the City to set implement a basic streetscape while development is implemented.



## Full Buildout Streetscape

Once the site has been developed, the streetscape can be improved accordingly. The green boulevard may be strategically covered to allow for street furniture and pedestrian flow to occupy the sidewalk.



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# APPENDIX G

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# City Decision Making Matrix

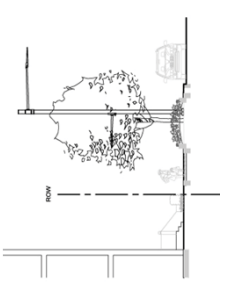
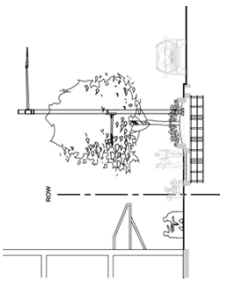
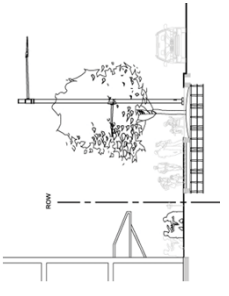
PLANNING STAGE	QUESTION OF...	CITY DECISION POINTS	SIMPLIFIED YES / NO BASED UPON...	CRITERIA
Master Planning Level	Commitment	<b>Master Plan Identification</b>	Is this worth our Investment?	<ul style="list-style-type: none"> <li>- Is there a potential return on investment?</li> <li>- Is it in line with the Official Plan?</li> <li>- Will it help the growth / development of the municipality?</li> <li>- Is the master plan in an identified intensification area of the Official Plan?</li> <li>- Is the master plan in an area with a high potential for future densification and development?</li> <li>- Does the master plan aid in increasing densification to support public transit?</li> <li>- Does the master plan respond to transportation initiatives outlined by regional / provincial plans?</li> <li>- Will the master plan potentially contribute to the economic prosperity of local businesses through:                             <ul style="list-style-type: none"> <li>- Growth in pedestrian traffic</li> <li>- Growth in retail sales</li> <li>- Achievable rents</li> <li>- Increased area demand</li> <li>- Growth in assessment</li> <li>- Enhanced value of surrounding lands</li> </ul> </li> <li>- Will the master plan potentially contribute to the residential desirability of the area through:                             <ul style="list-style-type: none"> <li>- Increased area demand</li> <li>- Growth in assessment</li> <li>- Enhanced value of surrounding lands</li> <li>- Raised quality of life</li> <li>- Quality of place and city building</li> </ul> </li> </ul>
	Affordability	<b>Master Plan Financial Commitments</b>  <b>Funding and Negotiations</b>	Can we <u>potentially</u> afford it now and in the future?  Will others help us and how much?	<ul style="list-style-type: none"> <li>- Is the design appropriate for the purpose and vision of the area?</li> <li>- Is the municipality willing to commit the capital funds necessary to achieve the appropriate level of service?</li> <li>- Given the expected growth in the area, will the municipality potentially be able to afford the future financial commitments?</li> <li>- What are the positive / negative impacts of increasing / lowering the level of service?</li> <li>- Do the positive / negative impacts of increasing / lowering the level of service proposed compromise the design needs?</li> <li>- Who are the potential funding partners?                             <ul style="list-style-type: none"> <li>- Regional</li> <li>- Developers</li> <li>- Federal and Provincial Programs</li> <li>- Municipal</li> </ul> </li> <li>- What programs are available to aid in the capital funding of the project?</li> <li>- What organizations are willing to partner with the municipality to fund the capital cost to complete the project?</li> <li>- Can we negotiate with the various funding partners for more funds?</li> <li>- Given the available funding, can the municipality afford to fund the difference?</li> <li>- Will the future densification be able to afford the on-going operations and maintenance?</li> </ul>
Project Planning Level	Logistics	<b>Project Details</b>	Can we <u>realistically</u> afford the project?  Is the project still what we envisioned?	<ul style="list-style-type: none"> <li>- Is the detailed design of the project faithful to the intent of the master plan?</li> <li>- Are the objective sof the master plan met by the detailed design?</li> <li>- Does the detailed design reveal any new concerns not previously known in the master plan?                             <ul style="list-style-type: none"> <li>- Are the new issues adequately addressed in the detailed design?</li> <li>- Do the new issues add significant capital and future cost to the project?</li> <li>- Are the additional costs to address the issues unavoidable?</li> <li>- Can the municipality afford the new costs?</li> </ul> </li> <li>- Does the detaile design add new features to the project?                             <ul style="list-style-type: none"> <li>- Do the new features add any benefits to the municipality and residents?</li> <li>- Do the new features add significant capital and future cost to the project?</li> <li>- Do the benefits justify the increased costs?</li> <li>- Can the municipality afford the new costs?</li> </ul> </li> <li>- Given the detailed costing, is the project still realistically affordable?</li> <li>- Can the project be implemented in the phasing proposed with minimal disruption to the businesses and residents?</li> <li>- Is there benefit to increasing / decreasing the overall timeline of the project?</li> </ul>
Value Engineering Level	Value / Efficiency	<b>Value Engineering</b>	Can we get the best value for our investment?	<ul style="list-style-type: none"> <li>- Is the detailed design cost effective?</li> <li>- Are there alternative construction details which could be of more efficient construction?</li> <li>- Are there alternative manufactureres whose products perform comparably but are more cost effective?</li> <li>- Are there any design elements which could be eliminated or modified without compromising the overall design intent?</li> </ul>
Implementation Level	Satisfaction	<b>Proceed to Construction</b>	Should we go ahead with the project?	<ul style="list-style-type: none"> <li>- Are there any reasons why the project should not be approved for implementation?</li> </ul>

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# APPENDIX H

ZONE	LEVEL OF SERVICE	STANDARD URBAN	ENHANCED	PREMIUM
Continuity Strip Zone	<p><b>Hardscape</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone</p> <p><b>Hardscape</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone                      Tactile Paving</p> <p><b>Trees and Planters</b>                      Tree Deciduous 60mm Caliper                      Tree Deciduous 80mm Caliper                      Tree Deciduous 100mm Caliper                      Tree Coniferous 2.0m Height                      Tree Coniferous 2.5m Height                      Tree Coniferous 3.0m Height                      Single Tree Grate                      Flush Planter Curb                      Raised Planter Curb                      Seat-Wall Planter Curb (0.45m)                      Planting Soil                      Compacted Mulch                      Perennials and Ornamental Grasses                      Soil Cells</p> <p><b>Softscape</b>                      Planting Bed                      Sod                      Perennials and Ornamental Grasses                      Deciduous Shrubs 600mm Height                      Deciduous Shrubs 1000mm Height                      Deciduous Shrubs 1500mm Height                      Coniferous Shrubs 600mm Height                      Hanging Flower Basket                      Free Standing Planter</p> <p><b>Furniture</b>                      Bench                      Trash Receptacle                      Bicycle Rack                      Banners                      Way-Finding Signage                      Bollard</p>	✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
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		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
Amenity Zone	<p><b>Main Field</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone</p> <p><b>Paving Accent</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone</p> <p><b>Multi-Purpose Trails</b>                      Asphalt</p> <p><b>Hardscape</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Pavers                      Natural Stone</p> <p><b>Softscape</b>                      Planting Bed                      Sod                      Perennials and Ornamental Grasses                      Deciduous Shrubs 600mm Height                      Deciduous Shrubs 1000mm Height                      Deciduous Shrubs 1500mm Height                      Coniferous Shrubs 600mm Height</p>	✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
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		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
Pedestrian Clearway Zone	<p><b>Main Field</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone</p> <p><b>Paving Accent</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone</p> <p><b>Multi-Purpose Trails</b>                      Asphalt</p> <p><b>Hardscape</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Pavers                      Natural Stone</p> <p><b>Softscape</b>                      Planting Bed                      Sod                      Perennials and Ornamental Grasses                      Deciduous Shrubs 600mm Height                      Deciduous Shrubs 1000mm Height                      Deciduous Shrubs 1500mm Height                      Coniferous Shrubs 600mm Height</p>	✓	✓	✓
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		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
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Frontage Zone	<p><b>Main Field</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone</p> <p><b>Paving Accent</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone</p> <p><b>Multi-Purpose Trails</b>                      Asphalt</p> <p><b>Hardscape</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Pavers                      Natural Stone</p> <p><b>Softscape</b>                      Planting Bed                      Sod                      Perennials and Ornamental Grasses                      Deciduous Shrubs 600mm Height                      Deciduous Shrubs 1000mm Height                      Deciduous Shrubs 1500mm Height                      Coniferous Shrubs 600mm Height</p>	✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
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ZONE	LEVEL OF SERVICE					
	STANDARD URBAN	ENHANCED	PREMIUM			
						
<b>Median Zone</b>	<p><b>Hardscape</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone                      Tactile Paving</p> <p><b>Trees and Planters</b>                      Tree Deciduous 60mm Caliper                      Tree Deciduous 80mm Caliper                      Tree Deciduous 100mm Caliper                      Tree Coniferous 2.0m Height                      Tree Coniferous 2.5m Height                      Tree Coniferous 3.0m Height                      Seat-Wall Planter Curb (0.45m)                      Planting Soil                      Compacted Mulch                      Perennials and Ornamental Grasses</p> <p><b>Softscape</b>                      Planting Bed                      Sod                      Perennials and Ornamental Grasses                      Deciduous Shrubs 600mm Height                      Deciduous Shrubs 1000mm Height                      Deciduous Shrubs 1500mm Height                      Coniferous Shrubs 600mm Height</p>	✓	✓	✓		
		✓	✓	✓		
		✓	✓	✓		
		✓	✓	✓		
		✓	✓	✓		
		✓	✓	✓		
		✓	✓	✓		
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		✓	✓	✓		
		✓	✓	✓		
		✓	✓	✓		
		<b>Illumination Elements</b>	<p><b>Standard</b>                      Street Lighting (Pole &amp; Light)                      Pedestrian Lighting (Pole &amp; Light)                      Pedestrian Lighting only (on existing Street Light Pole)                      Street &amp; Pedestrian Lighting (Pole &amp; Light)</p> <p><b>Specialty</b>                      Bollard Lighting                      Paving Lighting                      Accent Lighting                      Seat-Wall Lighting                      Up Lighting                      Wall Wash Light</p>	✓	✓	✓
				✓	✓	✓
				✓	✓	✓
✓	✓			✓		
✓	✓			✓		
✓	✓			✓		
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✓	✓			✓		
✓	✓			✓		
<b>Innovation</b>	<p><b>Low Impact Development Measures</b>                      Bioretention                      Rain Garden                      Vegetated Swale                      Box Planter                      Cistern</p>	✓	✓	✓		
		✓	✓	✓		
		✓	✓	✓		
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		✓	✓	✓		
<b>Intersection Zone</b>	<p><b>Major Intersection Corner Treatment</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone                      Tactile Paving</p> <p><b>Minor Intersection Corner Treatment</b>                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Pre-Cast Concrete Unit Pavers on Granular Base                      Permeable Paving                      Natural Stone                      Tactile Paving</p> <p><b>Crosswalk</b>                      Asphalt with Painted Lines                      Poured in Place Concrete                      Pre-Cast Concrete Unit Pavers on Concrete Base                      Permeable Paving                      Natural Stone                      Raised Crosswalk                      Streetprint</p>	✓	✓	✓		
		✓	✓	✓		
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# APPENDIX I

# Streetscape Component Breakdown Chart

Intensification Area: Street Jurisdiction: Street Hierarchy:	Streetscape Type: Street: Blocks:	ROW Width: Boulevard Width:	LEVEL OF SERVICE			LIFE EXPECTANCY			
			BASIC	ENHANCED	PREMIUM	VAUGHAN DC	ENHANCED	PREMIUM	VAUGHAN DC
ITEMS (BOULEVARD COMPONENT / ITEM)			DESIGN AND CAPITAL CONSTRUCTION			TOTAL / LINEAR METER			
SERVICE LEVEL	QUANTITY	UNIT	CAPITAL UNIT COST	UNIT COST / LINEAR METER	TOTAL (Single Sided Context)	BASIC	ENHANCED	PREMIUM	VAUGHAN DC
CONTINUITY STRIP ZONE			Single Sided			Approx. Streetscape Single Sided (lm)			
<b>Continuity Strip Zone</b>									
<i>Hardscape</i>									
Standard	Poured in Place Concrete	sq.m	\$100.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Pre-Cast Concrete Unit Pavers on Concrete Base	sq.m	\$222.00	\$0.00	\$0.00	25	25-35	35+	30
Enhanced	Pre-Cast Concrete Unit Pavers on Granular Base	sq.m	\$126.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Permeable Paving	sq.m	\$117.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Natural Stone	sq.m	\$200.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Tactile Paving	sq.m	\$222.00	\$0.00	\$0.00	20	20-30	30+	25*
<i>Amenity Zone</i>									
<i>Hardscape</i>									
Standard	Poured in Place Concrete	sq.m	\$100.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Pre-Cast Concrete Unit Pavers on Concrete Base	sq.m	\$222.00	\$0.00	\$0.00	25	25-35	35+	30
Enhanced	Pre-Cast Concrete Unit Pavers on Granular Base	sq.m	\$126.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Permeable Paving	sq.m	\$117.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Natural Stone	sq.m	\$200.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Tactile Paving	sq.m	\$222.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Flush Planter Curb	lm	\$70.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Raised Planter Curb	lm	\$125.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Seawall Planter Curb	lm	\$600.00	\$0.00	\$0.00	20	20-30	30+	25*
<i>Trees and Planters</i>									
Standard	Tree Deciduous 60mm Calliper	ea.	\$550.00	\$0.00	\$0.00	35	35-55	55+	45
Enhanced	Tree Deciduous 80mm Calliper	ea.	\$650.00	\$0.00	\$0.00	35	35-55	55+	45
Premium	Tree Deciduous 100mm Calliper	ea.	\$800.00	\$0.00	\$0.00	35	35-55	55+	45
Enhanced	Tree Coniferous 2.0m Height	ea.	\$625.00	\$0.00	\$0.00	35	35-55	55+	45
Premium	Tree Coniferous 2.5m Height	ea.	\$750.00	\$0.00	\$0.00	35	35-55	55+	45
Standard	Tree Coniferous 3.0m Height	ea.	\$1,200.00	\$0.00	\$0.00	90	100	110+	100*
Standard	Single Tree Grate	ea.	\$1,200.00	\$0.00	\$0.00	90	100	110+	100*
Standard	Planting Soil	cubic.m	\$38.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Compacted Mulch	sq.m	\$25.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Perennials and Ornamental Grasses	sq.m	\$50.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Soil Cells	sq.m	\$410.00	\$0.00	\$0.00	90	100	110+	100*
<i>Softscape</i>									
Standard	Planting Bed	sq.m	\$34.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Sod	sq.m	\$6.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Perennials and Ornamental Grasses	sq.m	\$50.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Deciduous Shrubs 600mm Height	ea.	\$50.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Deciduous Shrubs 1000mm Height	ea.	\$85.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Deciduous Shrubs 1500mm Height	ea.	\$120.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Coniferous Shrubs 600mm Height	ea.	\$75.00	\$0.00	\$0.00	10	10-20	20+	15*
Enhanced	Hanging Flower Basket	ea.	\$250.00	\$0.00	\$0.00	10	10-20	20+	15*
Enhanced	Free Standing Planter	ea.	\$250.00	\$0.00	\$0.00	10	10-20	20+	15*
<i>Furniture</i>									
Enhanced	Bench	ea.	\$1,859.00	\$0.00	\$0.00	10	10-20	20+	15
Enhanced	Trash Receptacle	ea.	\$2,123.00	\$0.00	\$0.00	10	10-20	20+	15
Enhanced	Bicycle Stand	ea.	\$253.00	\$0.00	\$0.00	10	10-20	20+	15
Enhanced	Banners	ea.	\$375.00	\$0.00	\$0.00	10	10-20	20+	15*
Standard	Way-Finding Signage	ea.	\$3,500.00	\$0.00	\$0.00	10	10-20	20+	15*
Enhanced	Bollard	ea.	\$1,100.00	\$0.00	\$0.00	10	10-20	20+	15
<b>PEDESTRIAN CLEARWAY ZONE</b>									
<i>Main Field</i>									
Standard	Poured in Place Concrete	sq.m	\$100.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Pre-Cast Concrete Unit Pavers on Concrete Base	sq.m	\$222.00	\$0.00	\$0.00	25	25-35	35+	30
Enhanced	Pre-Cast Concrete Unit Pavers on Granular Base	sq.m	\$126.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Permeable Paving	sq.m	\$117.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Natural Stone	sq.m	\$200.00	\$0.00	\$0.00	20	20-30	30+	25*
<i>Paving Accent</i>									
Standard	Poured in Place Concrete	sq.m	\$100.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Pre-Cast Concrete Unit Pavers on Concrete Base	sq.m	\$222.00	\$0.00	\$0.00	25	25-35	35+	30
Enhanced	Pre-Cast Concrete Unit Pavers on Granular Base	sq.m	\$126.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Permeable Paving	sq.m	\$117.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Natural Stone	sq.m	\$200.00	\$0.00	\$0.00	20	20-30	30+	25*
<i>Multi-Purpose Trails</i>									
<i>Asphalt</i>									
Enhanced	Asphalt	sq.m	\$65.00	\$0.00	\$0.00	5	5-15	15+	10
<b>FRONTAGE ZONE</b>									
<i>Hardscape</i>									
Standard	Poured in Place Concrete	sq.m	\$100.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Pre-Cast Concrete Unit Pavers on Concrete Base	sq.m	\$222.00	\$0.00	\$0.00	25	25-35	35+	30
Enhanced	Pre-Cast Concrete Unit Pavers on Granular Base	sq.m	\$126.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Permeable Pavers	sq.m	\$117.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Natural Stone	sq.m	\$200.00	\$0.00	\$0.00	20	20-30	30+	25*
<i>Softscape</i>									
Standard	Planting Bed	sq.m	\$34.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Sod	sq.m	\$6.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Perennials and Ornamental Grasses	sq.m	\$50.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Deciduous Shrubs 600mm Height	ea.	\$50.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Deciduous Shrubs 1000mm Height	ea.	\$85.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Deciduous Shrubs 1500mm Height	ea.	\$120.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Coniferous Shrubs 600mm Height	ea.	\$75.00	\$0.00	\$0.00	10	10-20	20+	15*
<b>MEDIAN ZONE</b>									
<i>Hardscape</i>									
Standard	Poured in Place Concrete	sq.m	\$100.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Pre-Cast Concrete Unit Pavers on Concrete Base	sq.m	\$222.00	\$0.00	\$0.00	25	25-35	35+	30
Enhanced	Pre-Cast Concrete Unit Pavers on Granular Base	sq.m	\$126.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Permeable Paving	sq.m	\$117.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Natural Stone	sq.m	\$200.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Tactile Paving	sq.m	\$222.00	\$0.00	\$0.00	20	20-30	30+	25*
<i>Trees and Planters</i>									
Standard	Tree Deciduous 60mm Calliper	ea.	\$550.00	\$0.00	\$0.00	35	35-55	55+	45
Enhanced	Tree Deciduous 80mm Calliper	ea.	\$650.00	\$0.00	\$0.00	35	35-55	55+	45
Premium	Tree Deciduous 100mm Calliper	ea.	\$800.00	\$0.00	\$0.00	35	35-55	55+	45
Standard	Tree Coniferous 2.0m Height	ea.	\$625.00	\$0.00	\$0.00	35	35-55	55+	45
Premium	Tree Coniferous 2.5m Height	ea.	\$750.00	\$0.00	\$0.00	35	35-55	55+	45
Enhanced	Tree Coniferous 3.0m Height	ea.	\$1,200.00	\$0.00	\$0.00	90	100	110+	100*
Standard	Seat-Wall Planter Curb (0.45m)	lm	\$600.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Planting Soil	cubic.m	\$38.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Compacted Mulch	sq.m	\$25.00	\$0.00	\$0.00	20	20-30	30+	25
<i>Softscape</i>									
Standard	Planting Bed	sq.m	\$34.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Sod	sq.m	\$6.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Perennials and Ornamental Grasses	sq.m	\$50.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Deciduous Shrubs 600mm Height	ea.	\$50.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Deciduous Shrubs 1000mm Height	ea.	\$85.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Deciduous Shrubs 1500mm Height	ea.	\$120.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Coniferous Shrubs 600mm Height	ea.	\$75.00	\$0.00	\$0.00	10	10-20	20+	15*
<b>ILLUMINATION ELEMENTS</b>									
<i>Standard</i>									
Standard	Street Lighting	ea.	\$7,000.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Pedestrian Lighting	ea.	\$6,500.00	\$0.00	\$0.00	20	20-30	30+	25
Enhanced	Street and Pedestrian Lighting Pole and Light	ea.	\$10,000.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Pedestrian Lighting Only (On Existing Pole)	ea.	\$3,800.00	\$0.00	\$0.00	20	20-30	30+	25
<i>Specialty</i>									
Enhanced	Bollard Lighting	ea.	\$1,700.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Paving Lighting	ea.	\$680.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Accent Lighting	ea.	\$680.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Seat-Wall Lighting	ea.	\$100.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Up Lighting	ea.	\$1,000.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Wall Wash Lighting	ea.	\$700.00	\$0.00	\$0.00	20	20-30	30+	25*
<b>INNOVATION</b>									
<i>Low Impact Development Measures</i>									
Enhanced	Bioretention	sq.m	\$140.00	\$0.00	\$0.00	35	35-55	55+	45*
Enhanced	Rain Garden	sq.m	\$100.00	\$0.00	\$0.00	35	35-55	55+	45*
Enhanced	Vegetated Swale	sq.m	\$23.00	\$0.00	\$0.00	35	35-55	55+	45*
Enhanced	Box Planter	sq.m	\$150.00	\$0.00	\$0.00	35	35-55	55+	45*
Enhanced	Cistern	sq.m	\$606.00	\$0.00	\$0.00	35	35-55	55+	45*
<b>INTERSECTION ZONE</b>									
<i>Major Intersection Corner Treatment</i>									
Standard	Poured in Place Concrete	sq.m	\$100.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Pre-Cast Concrete Unit Pavers on Concrete Base	sq.m	\$222.00	\$0.00	\$0.00	25	25-35	35+	30
Standard	Pre-Cast Concrete Unit Pavers on Granular Base	sq.m	\$126.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Permeable Paving	sq.m	\$117.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Natural Stone	sq.m	\$200.00	\$0.00	\$0.00	20	20-30	30+	25*
Standard	Tactile Paving	sq.m	\$222.00	\$0.00	\$0.00	20	20-30	30+	25*
<i>Minor Intersection Corner Treatment</i>									
Standard	Poured in Place Concrete	sq.m	\$100.00	\$0.00	\$0.00	20	20-30	30+	25
Standard	Pre-Cast Concrete Unit Pavers on Concrete Base	sq.m	\$222.00	\$0.00	\$0.00	25	25-35	35+	30
Standard	Pre-Cast Concrete Unit Pavers on Granular Base	sq.m	\$126.00	\$0.00	\$0.00	20	20-30	30+	25*
Enhanced	Permeable Paving	sq.m	\$117.00	\$0.00	\$0.00	20	20-30	30+	25*
Premium	Natural								

# APPENDIX J

# Operations and Maintenance Assumptions

ZONE	MAINTENANCE ELEMENT	MAINTENANCE INCLUDED	RESPONSIBLE DEPARTMENT	MAINTENANCE UNIT COST	UNIT TYPE	TOTAL UNIT COST	ROUNDED UNIT COST	UNIT TYPE
CONTINUITY STRIP ZONE	Hardscape Concrete	Concrete Repairs *including 10% landscape restoration	Public Works	\$0.11	sq.m	\$0.11	\$0.25	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Granular Base	Public Works	\$7.00	sq.m	\$7.00	\$7.00	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Concrete Base	Public Works	\$15.00	sq.m	\$15.00	\$15.00	sq.m
	Spring Cleanup	Salt Strip Sweeping	Parks and Forestry	\$0.38	sq.m	\$0.38	\$0.40	sq.m
	Snow	Snow Removal	Public Works	\$20.00	sq.m	\$20.00	\$20.00	sq.m
	Hardscape Concrete	Concrete Repairs *including 10% landscape restoration	Public Works	\$0.11	sq.m	\$0.11	\$0.25	sq.m
AMENITY ZONE	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Granular Base	Public Works	\$7.00	sq.m	\$7.00	\$7.00	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Concrete Base	Public Works	\$15.00	sq.m	\$15.00	\$15.00	sq.m
	Hardscape Planter Curb	Concrete Repairs *including 10% landscape restoration	Public Works	\$0.11	lm	\$0.11	\$0.25	lm
	Snow	Snow Removal	Public Works	\$20.00	sq.m	\$20.00	\$20.00	sq.m
	Street Trees	Pruning (\$500 / yr on 6 yr cycle) Watering (10 yr life cycle)	Parks and Forestry	\$85.00	ea.	\$85.00	\$85.00	ea.
		Mulching and Fertilization (\$15 / 3 yr)	Parks and Forestry	\$5.00	ea.	\$5.00	\$5.00	ea.
		Infiltration / Irrigation / Flushing	Parks and Forestry	\$2.50	ea.	\$2.50	\$2.50	ea.
		Basic Root Pruning (\$30/35 yr lifecycle)	Parks and Forestry	\$0.86	ea.	\$0.86	\$0.86	ea.
		Basic Urban Root Pruning (\$30/35 yr lifecycle)	Parks and Forestry	\$3.00	ea.	\$3.00	\$3.00	ea.
	Softscape	Planter Watering / Maintenance	Parks and Forestry	\$12.50	sq.m	\$12.50	\$12.50	sq.m
		Hanging Basket Maintenance	Parks and Forestry	\$25.00	ea.	\$25.00	\$25.00	sq.m
		Trash Receptacle	ea.	\$640.00	ea.	\$640.00	\$640.00	ea.
		Planting Bed Mtce (debris cleanup, mulching etc.)	Parks and Forestry	\$0.16	sq.m	\$0.16	\$0.16	sq.m
		Lawn Mowing (incl debris cleanup)	Parks and Forestry	\$0.03	sq.m	\$0.03	\$0.03	sq.m
	Hardscape Concrete	Concrete Repairs *including 10% landscape restoration	Public Works	\$0.11	sq.m	\$0.11	\$0.25	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Granular Base	Public Works	\$7.00	sq.m	\$7.00	\$7.00	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Concrete Base	Public Works	\$15.00	sq.m	\$15.00	\$15.00	sq.m
	PEDESTRIAN CLEARWAY ZONE	Snow	Snow Plowing	Parks and Forestry	\$0.82	sq.m	\$0.82	\$1.00
Hardscape Concrete		Concrete Repairs *including 10% landscape restoration	Public Works	\$0.11	sq.m	\$0.11	\$0.25	sq.m
Hardscape Unit Paving		Unit Paver Repairs *including 10% landscape restoration Granular Base	Public Works	\$7.00	sq.m	\$7.00	\$7.00	sq.m
Hardscape Unit Paving		Unit Paver Repairs *including 10% landscape restoration Concrete Base	Public Works	\$15.00	sq.m	\$15.00	\$15.00	sq.m
Softscape		Planting Watering	Parks and Forestry	\$12.50	sq.m	\$12.50	\$12.50	sq.m
		Planting Bed Mtce (debris cleanup, mulching etc.)	Parks and Forestry	\$0.16	sq.m	\$0.16	\$10.00	sq.m
		Lawn Mowing	Parks and Forestry	\$0.03	sq.m	\$0.03	\$0.05	sq.m
Median Hardscape		Litter Removal	Public Works	\$1.00	sq.m	\$1.00	\$1.00	sq.m
Median Softscape		Planter Watering / Maintenance	Parks and Forestry	\$12.50	sq.m	\$12.50	\$12.50	sq.m
		Ground Cover Trash Removal / Maintenance	Parks and Forestry	\$10.00	sq.m	\$10.00	\$10.00	sq.m
Street Trees		Pruning (\$500 / yr on 6 yr cycle) Watering	Parks and Forestry	\$85.00	ea.	\$85.00	\$85.00	ea.
		Mulching and Fertilization (\$15 / 3 yr)	Parks and Forestry	\$5.00	ea.	\$5.00	\$5.00	ea.
	Basic Root Pruning (\$30/35 yr lifecycle)	Parks and Forestry	\$0.86	ea.	\$0.86	\$0.86	ea.	
	Basic Urban Root Pruning (\$30/35 yr lifecycle)	Parks and Forestry	\$3.00	ea.	\$3.00	\$3.00	ea.	
	Basic Tree Removal/Stumping (\$550 at end of 35 yr life)	Parks and Forestry	\$15.71	ea.	\$15.71	\$15.71	ea.	
	Tree Removal/Stumping (\$250 at end of 10 yr life)	Parks and Forestry	\$25.00	ea.	\$25.00	\$25.00	ea.	
	Infiltration / Irrigation / Flushing	Parks and Forestry	\$2.50	ea.	\$2.50	\$2.50	ea.	
ILLUMINATION ELEMENTS	Typical Lighting	Street Lighting	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
		Pedestrian Lighting	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
		Street / Pedestrian Combo	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
	Specialty Lighting	Bollard Lighting	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
		Paving Lighting	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
		Accent Lighting	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
		Seat-Wall Lighting	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
		Up Lighting	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
		Wall Wash Lighting	Public Works	\$36.00	ea.	\$36.00	\$36.00	ea.
	Bioretention			\$21.50	sq.m	\$21.50	\$22.00	sq.m
Rain Garden			\$23.50	sq.m	\$23.50	\$24.00	sq.m	
Vegetated Swale			\$0.60	sq.m	\$0.60	\$1.00	sq.m	
Box Planter			\$21.50	sq.m	\$21.50	\$22.00	sq.m	
Cistern			\$125.00	ea.	\$125.00	\$125.00	ea.	
INNOVATION	Hardscape Concrete	Concrete Repairs *including 10% landscape restoration	Public Works	\$0.11	sq.m	\$0.11	\$0.25	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Granular Base	Public Works	\$7.00	sq.m	\$7.00	\$7.00	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Concrete Base	Public Works	\$15.00	sq.m	\$15.00	\$15.00	sq.m
	Snow	Snow Plowing	Parks and Forestry	\$0.82	sq.m	\$0.82	\$1.00	sq.m
		Snow Removal	Public Works	\$20.00	sq.m	\$20.00	\$20.00	sq.m
INTERSECTION ZONE (Pedestrian Corner Treatments)	Hardscape Concrete	Concrete Repairs *including 10% landscape restoration	Public Works	\$0.11	sq.m	\$0.11	\$0.25	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Granular Base	Public Works	\$7.00	sq.m	\$7.00	\$7.00	sq.m
	Hardscape Unit Paving	Unit Paver Repairs *including 10% landscape restoration Concrete Base	Public Works	\$15.00	sq.m	\$15.00	\$15.00	sq.m
	Snow	Snow Plowing	Parks and Forestry	\$0.82	sq.m	\$0.82	\$1.00	sq.m
	Snow Removal	Public Works	\$20.00	sq.m	\$20.00	\$20.00	sq.m	