Memo

Stantec

To:	Gerard Wall, AICP New York NY Office	From:	Vincent Cirrito, RLA New York NY Office
File:		Date:	June 8, 2010

Reference: Landscape Shadow Study – Bronx River Parkway and Starlight Park

You asked us to review the potential reduction of sunlight impact that the proposed West Farms Project might have on the vegetation proposed by the NYSDOT to be installed along the Bronx River Parkway and in Starlight Park. This memo is a summary of our findings.

Under current CEQR regulations, a shadow is defined as the circumstance in which a building or other built structure blocks the ability of the sun from reaching the land. An adverse shadow impact is considered to occur when the shadow from a proposed project falls on publicly accessible open space *if* the features that make the resource significant is dependent on sunlight for its survival or success.

According to the Incremental Shadow Duration Table and Shadow Study Diagrams you provided, both the Bronx River Greenway and Starlight Park will receive some incremental shadow from the proposed action. The shadows created from the action will generally be cast in the late afternoon, no earlier than 3:30 PM, during the typical active landscape season of March to September.

The following table lists the sunlight duration and incremental shadow time from the proposed action during the Spring and Fall Equinoxes (March 21 and September 21), where the shadows cast are at their peak duration during the typical landscape growing season.

Starlight Park

Sector A1

Post Project Construction – Duration of Available Sunlight:	7 hours 09 minutes
Incremental Shadow Time Added - Post Construction:	3:39 PM to 7:09 PM

Sector A2.1

Post Project Construction – Duration of Available Sunlight:	7 hours 09 minutes
Incremental Shadow Time Added - Post Construction:	3:39 PM to 7:09 PM

Reference: Landscape Shadow Study – Bronx River Parkway and Starlight Park

Sector A2.2

Post Project Construction – Duration of Available Sunlight:	7 hours 30 minutes
Incremental Shadow Time Added - Post Construction:	4:30 PM to 7:09 PM

Sector A3

Post Project Construction – Duration of Available Sunlight:	7 hours 45 minutes
Incremental Shadow Time Added - Post Construction:	4:15 PM to 7:09 PM

Sector A4

Post Project Construction – Duration of Available Sunlight:	12 hours 09 minutes
Incremental Shadow Time Added - Post Construction:	No effect

Sector A5

Post Project Construction – Duration of Available Sunlight:	8 hours 20 minutes
Incremental Shadow Time Added - Post Construction:	4:50 PM to 7:09 PM

Sector A6

Post Project Construction – Duration of Available Sunlight:	8 hours 25 minutes
Incremental Shadow Time Added - Post Construction:	4:55 PM to 7:09 PM

Sector A7

Post Project Construction – Duration of Available Sunlight:	8 hours 15 minutes
Incremental Shadow Time Added - Post Construction:	4:45 PM to 7:09 PM

Bronx River Greenway

Sector B1

Post Project Construction – Duration of Available Sunlight:	12 hours 09 minutes
Incremental Shadow Time Added - Post Construction:	No effect

Reference: Landscape Shadow Study – Bronx River Parkway and Starlight Park

Sector B2

Post Project Construction – Duration of Available Sunlight:	12 hours 09 minutes
Incremental Shadow Time Added - Post Construction:	No effect

Sector C1

Post Project Construction – Duration of Available Sunlight:	7 hours 00 minutes
Incremental Shadow Time Added - Post Construction:	3:30 PM to 7:09 PM

Sector C2

Post Project Construction – Duration of Available Sunlight:	7 hours 47 minutes
Incremental Shadow Time Added - Post Construction:	4:15 PM to 7:09 PM

Sector C3

Post Project Construction – Duration of Available Sunlight:	8 hours 47 minutes
Incremental Shadow Time Added - Post Construction:	5:15 PM to 7:09 PM

Sector C4

Post Project Construction – Duration of Available Sunlight:	8 hours 39 minutes
Incremental Shadow Time Added - Post Construction:	5:00 PM to 7:09 PM

All the plants proposed for installation within the Bronx River Greenway and Starlight Park have either a full sunlight or full sunlight to partial shade light requirement for survival and success. Generally, full sunlight is characterized by the plant receiving six (6) or more hours of direct unobstructed sunlight on a sunny day and partial shade is characterized by the plant receiving less than six (6) hours of sunlight, but more than three (3) hours. Many plants that require full sunlight, but are planted in areas where they receive less than six (6) hours of sunlight, are still generally healthy although they may not thrive as well, flower as heavily or have foliage as vibrant as if their sunlight requirements were completely met.

The following planting list is from the New York State Department of Transportation's Bronx River Greenway Project (Contract No. D261003). Each proposed individual plant is listed with its associated sunlight requirements.

Reference: Landscape Shadow Study – Bronx River Parkway and Starlight Park

Plant Type (Botanical Name)	**Sunlight Requirements**
Major Deciduous Trees	
Fraxinus americana 'Autumn Purple'	Full Sunlight to Partial Shade
Fraxinus american	Full Sunlight to Partial Shade
Quercus alba	Full Sunlight to Partial Shade
Liquidambar styraciflua	Full Sunlight to Partial Shade
Plantanus x acerifolea 'Blood Good'	Full Sunlight to Partial Shade
Quercus rubra	Full Sunlight
Sassafras albidum	Full Sunlight
Tilia americana	Full Sunlight to Partial Shade
Celtis occidentalis	Full Sunlight
Liriodendron tulipifera	Full Sunlight
Quercus prinus	Full Sunlight
Minor Deciduous Trees	
Amelanchier canadensis	Full Sunlight
Betula populifolia	Full Sunlight
Cornus florida	Full Sunlight to Partial Shade
Hamamelis virginiana	Full Sunlight or Shade
Salix nigra	Full Sunlight to Partial Shade
Prunus pensylvanica	Full Sunlight
Prunus serotina	Full Sunlight to Partial Shade
Deciduous Shrubs	
Aronia melanocarpa	Full Sunlight to Partial Shade
Vaccinium angustifolium	Full Sunlight to Partial Shade
Rubus allegheniensis	Full Sunlight to Partial Shade
Rhus typhina	Full Sunlight to Partial Shade
Sambucus canadensis	Full Sunlight to Partial Shade
Spiraea tomentosa	Full Sunlight
Aronia arbutifolia	Full Sunlight to Partial Shade
Clethra alnifolia	Full Sunlight to Partial Shade
Viburnum acerifolium	Full Sunlight to Partial Shade
Viburnum dentatum	Full Sunlight to Partial Shade
Viburnum prunifolium	Full Sunlight to Partial Shade
Evergrreen Shrubs, Ground Covers, Wetland Plantings, Bulbs & Perennials	
Kalmia angustifolia	Full Sunlight to Partial Shade
Kalmia latifolia	Full Sunlight to Partial Shade
Gaultheria procumbens	Full Sunlight to Partial Shade
Arctostaphylos uva-ursi	Full Sunlight to Partial Shade
Carex pensylvanica	Full Sunlight to Partial Shade
Carex stipata	Full Sunlight to Partial Shade
Glyceria striata	Full Sunlight to Partial Shade
Elymus virginicus	Full Sunlight to Partial Shade
Geranium maculatum	Full Sunlight to Partial Shade
Lobelia siphilitica	Full Sunlight to Partial Shade

Lupinus perennis	Full Sunlight
Solidago nemoralis	Full Sunlight to Partial Shade
Eupatorium maculatum	Full Sunlight to Partial Shade
Juncus effusus	Full Sunlight to Partial Shade
Aster novi-belgii	Full Sunlight
Dennstaedtia punctilobula	Partial Shade
Dryopteris marginalis	Partial Shade
Polystichum acrostichoides	Partial Shade

Summary:

Based on our review of the materials submitted, we believe that the shadows cast from the proposed project will not reduce the sunlight within all Sectors less than six (6) hours. It is therefore our opinion that no significant adverse shadow impacts could be expected for the landscape materials proposed to be located within the Bronx River Greenway and Starlight Park.