

## NORTH TONAWANDA BOTANICAL GARDEN LIVING SHORELINE PROJECT- GREEN INFRASTRUCTURE IMPLEMENTATION

The North Tonawanda Botanical Garden Living Shoreline Restoration Project, completed in 2021, applies green infrastructure principles including bioswales, rain gardens, tree plantings, and removal of a portion of the parking lot and replacement with natural habitat. The project exists along Tonawanda Creek, and captures and filters stormwater from the adjacent parking lot before it flows into the creek.

The implementation of this project was led by Buffalo Niagara Waterkeeper. More information on the project, partners, and funders can be found at the following site-  
<https://bnwaterkeeper.org/projects/livingshorelines/north-tonawanda-botanical-garden/>

Stormwater capture calculations for this project, utilizing EPA's National Stormwater Calculator is as follows: 6,272,640 sq inches \* .79 inches max rainfall retained= 4, 955,385.6 cubic inches = 2,867.7 cubic feet per storm event

Before Photo:



After Photo:





**SITE IMPROVEMENT PLANS  
FOR**

**NORTH TONAWANDA BOTANICAL GARDEN  
LIVING SHORELINE PROJECT**

**1825 SWEENEY STREET  
NORTH TONAWANDA, NY 14120**

**ISSUED FOR BID  
AUGUST 13, 2020**



Centerpointe Corporate Park  
375 Essjay Road, Suite 200  
Williamsville, NY 14221  
[www.wendelcompanies.com](http://www.wendelcompanies.com)  
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Wendel Project No. 485703



NOT TO SCALE

**PROJECT LOCATION**

**SITE IMPROVEMENTS - DRAWING INDEX**

COVER SHEET	DESCRIPTION
CD101	GENERAL NOTES
CD101	PERMITS
CD101	CONSTRUCTION
CD101	VEGETATION
CD101	EROSION CONTROL
CD101	GRAVING
CD101	ASPHALT PAVEMENT
CD101	CONCRETE
CD101	IRONWORK
CD101	MECHANICAL
CD101	ELECTRICAL
CD101	PLUMBING
CD101	PAINTING
CD101	FINISHES
CD101	GENERAL CONTRACTOR

NO.	REVISIONS	DATE

**EXISTING CONDITIONS**

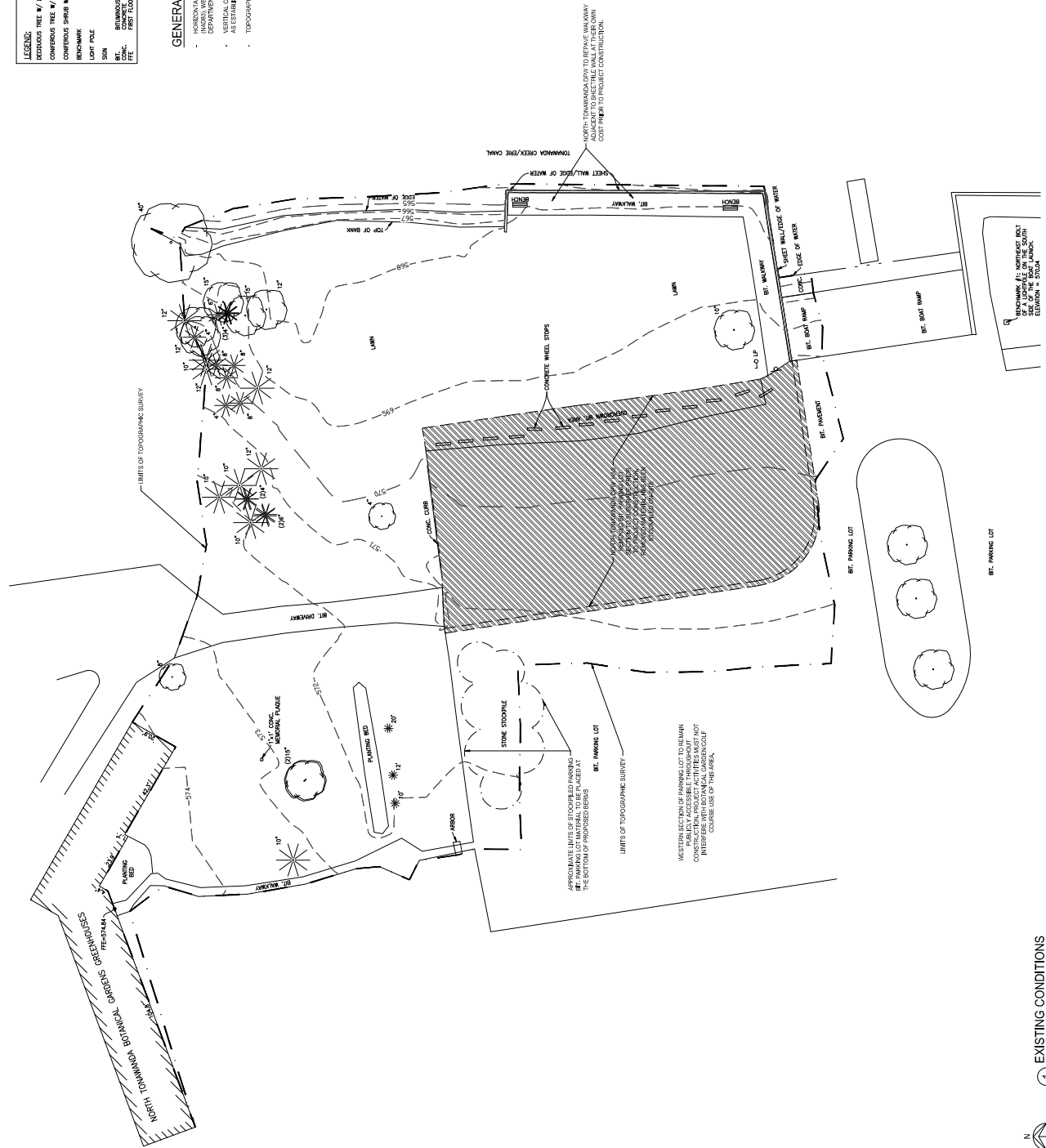
NO.	REVISIONS	DATE

**LEGEND:**

	DECIDUOUS TREE W/ DIAMETER		12" BOTTOM OF CURB ELEVATION
	CONFIGURIOUS TREE W/ DIAMETER		12" EDGE OF PAVEMENT ELEVATION
	CONFIGURIOUS SHRUB W/ DIAMETER		5" EXISTING SPOT ELEVATION
	BENCHMARK		12" TOP OF CURB ELEVATION
	LIGHT POLE		MAJOR CONTOUR LINE
	SPOT		MINOR CONTOUR LINE
	BENCHMARKS		100' FLOOR ELEVATION
	100' FLOOR ELEVATION		

**GENERAL NOTES:**

- HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (NAD 83) WITH THE DATUM OF 1983. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1989 (NAVD83).
- VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1989 (NAVD83).
- AS ESTABLISHED WITH THIS PROJECT.
- TOPOGRAPHIC INFORMATION SHOWN HEREON WAS GATHERED BY WENDEL ON OCTOBER 10, 2019.



**GENERAL NOTES**

- A. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS PRIOR TO THE FIELD BEFORE BEGINNING ANY WORK. PRIOR TO REMOVAL AND EXCAVATION OF EXISTING CONCRETE, CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF BUFFALO AND THE STATE OF NEW YORK.
- B. PRIOR TO START OF CONSTRUCTION, CONTRACTOR TO NOTIFY PROJECT LANDSCAPE ARCHITECT AND OWNER REPRESENTATIVE OF REPERMANENCE CONDITIONS. REPERMANENCE SHOWN ON LAND AND ACTUAL. FIELD CONDITIONS MAY VARY FROM REPERMANENCE SHOWN ON LAND AND ACTUAL. CONTRACTOR SHALL TAKE EXTRA MEASURES NOT NECESSARY IN PARTICULAR, CONTRACTOR SHALL TAKE EXTRA MEASURES NOT NECESSARY TO PROTECT EXISTING TREES TO REMAIN.
- C. TREES NOT TO BE REMOVED ARE TO REMAIN AND TO BE PROTECTED AS NECESSARY. CONTRACTOR SHALL TAKE EXTRA MEASURES NOT NECESSARY TO PROTECT EXISTING TREES TO REMAIN.
- D. CONTRACTOR SHALL TAKE EXTRA MEASURES NOT NECESSARY TO PROTECT EXISTING TREES TO REMAIN.
- E. CONSTRUCTION STAGING AND STORAGE AREAS TO BE COORDINATED WITH OWNER OCCUPANT AND CONTRACTOR.
- F. LANDSCAPE CONTRACTOR TO FLAG OR BENTLEY SURFACE UTILITIES PRIOR TO LOCATING AND EXCAVATING FOR ANY REGRADING, NEW TREES AND PLANTINGS.
- G. ALL LANDSCAPE PLANT MATERIALS SHALL CONFORM TO THE LATEST VERSION OF THE STANDARD SPECIFICATIONS FOR LANDSCAPE ARCHITECTURE. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF BUFFALO AND THE STATE OF NEW YORK.
- H. THE STANDARD SPECIFICATIONS FOR LANDSCAPE ARCHITECTURE, 10TH EDITION, SHALL BE USED FOR ALL PLANTING AND CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF BUFFALO AND THE STATE OF NEW YORK.
- I. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF BUFFALO AND THE STATE OF NEW YORK.
- J. ANY PLANT SUBSTITUTIONS OR ALTERNATIVE PLANT RECOMMENDATIONS MUST BE REVIEWED AND APPROVED BY THE OWNER AND THE PROJECT LANDSCAPE ARCHITECT.
- K. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF BUFFALO AND THE STATE OF NEW YORK.
- L. PROVIDE ONLY "PREMIUM QUALITY" NEW TOPSOIL COMPOST MIX AND MULCH TO INCLUDE 10% NEWLY REFINISHED TOPSOIL AND 20% CLEAN COMPOST.
- M. AN AUTOCAD FILE CAN BE PROVIDED TO THE CONTRACTOR FOR CONSTRUCTION STATEMENT BY A NEW YORK LICENSED LAND SURVEYOR.

**SITE IMPROVEMENT NOTES**

1. HEADQUARTERS UTILITIES TO BE COORDINATED WITH THE CITY OF BUFFALO. THE GRADE SHALL BE MAINTAINED AS SHOWN ON THE PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF BUFFALO AND THE STATE OF NEW YORK.
2. SEEDED AND MOWED PATHS.
3. LIMESTONE FERTILIZER (TYPE S) SHALL BE APPLIED TO THE ENTIRE SURFACE OF THE SITE PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF BUFFALO AND THE STATE OF NEW YORK.
4. NATURAL HABITAT FEATURE - FIELDED TREE. REFER TO SITE FILE ON DWG. C502.
5. EMERGENCY PLANTING ZONE 1. REFER TO GRADING PLAN ON DWG. C501 AND PLANTING PLAN ON DWG. C401.
6. SWALE FLOODPLAIN ZONE & EMERGENCY PLANTING ZONE 2 (TYPICAL). REFER TO PLANTING PLAN ON DWG. C401.
7. PLANTING PLAN ON DWG. C401.
8. UNGRADED CONCRETE WHEEL STOP (TYPICAL) (SEE DWG. C502).
9. UNGRADED CONCRETE WHEEL STOP (TYPICAL) (SEE DWG. C502).
10. ALTERNATE 5. TIMBER BOARDWALK BE 5. C502.
11. ASPHALT PAVEMENT REPAIR (BY NTPDW) BE 6. C501.
12. ACCEPTABLE EQUIVALENT STAKES SHALL BE PLACED TO LOC. WITH HEAVY DUTY YELLOW VILON TOPPE STRIPS THROUGHOUT.
13. CORN MAT SLOPE PROTECTION (SUITABLE FOR 3:1 SLOPE) STAKED PER MANUFACTURER'S RECOMMENDATION.
14. WILDLIFE DEFERMENT FENCING (BY 7. C502).
15. LIMESTONE FERTILIZER (TYPE S) SHALL BE APPLIED TO THE ENTIRE SURFACE OF THE SITE PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF BUFFALO AND THE STATE OF NEW YORK.
16. UNGRADED CONCRETE WHEEL STOP (TYPICAL) (SEE DWG. C502).



**1 SITE LAYOUT PLAN**  
SHEET 1-20



SITE CONTEXT MAP

SITE LANDSCAPING LEGEND

- LARGER CANOPY/DECIDUOUS TREE
- UNDERSTORY TREE
- EVERGREEN TREE/CONIFER TREE
- SHRUBS & CONTAINER GRASSES
- SWALE/FLOODPLAIN SEEDING ZONE (SFS)
- SWALE/FLOODPLAIN PLANTING ZONE (SFP)
- EMERGENT PLANTING ZONE (EPZ)
- COIR MAT SLOPE PROTECTION (SEE DWG. C201)
- UPLAND MEADOW SEEDING ZONE (DRM) (LGS)
- PROPOSED PATHS
- EXISTING DECIDUOUS TREE TO REMAIN
- EXISTING EVERGREEN TREE TO REMAIN
- EXISTING SHRUB TO REMAIN
- WILDLIFE DETERRENT FENCING (AQUATIC)
- WILDLIFE DETERRENT FENCING (UPLAND)

NORTH

WESTERN SECTION OF PARKING LOT TO REMAIN PUBLICLY ACCESSIBLE THROUGHOUT CONSTRUCTION. PROJECT ACTIVITIES MUST NOT INTERFERE WITH BOTANICAL GARDEN/GOLF COURSE USE OF THIS AREA.



LANDSCAPE MANAGEMENT AND MOWING PLAN KEY

- WETLAND + WET MEADOW MANAGEMENT**  
*No-mowing Required.*  
*Inspect for invasive species annually. If observed, remove as needed (refer to invasive species guide).*  
*Remove any trees and/or shrubs as desired to impede succession.*
- RIPARIAN SWALE AREAS**  
*No-mowing Required.*  
*Inspect for invasive species annually. If observed, remove as needed (refer to invasive species guide).*  
*Remove any trees and/or shrubs as desired to impede succession.*
- LOW-GROW MEADOW/LAWN**  
*Mow seasonally in spring / fall to maintain desired height.*
- MEADOW MANAGEMENT**  
*Mow down meadow areas once every 1-2 years in late winter / early spring. Avoid mowing when soils are saturated.*  
*Adjust blade height of mower to 6-12 inches to avoid damaging the crown of established native species. Leave cut materials in place to provide nutrients for next years plant growth and cover for wildlife.*  
*Inspect for invasive species annually. If observed, remove as needed (refer to invasive species guide).*
- SHRUB/TREE PLANTING AREA**  
*Inspect for invasive species annually. If observed, remove as needed (refer to invasive species guide)*

**PIGTAIL MEADOW DELINEATIONS**  
*Ensure markers remain staked in place with connecting rope intact (may need weekly/monthly adjustment) to help guide visitors through the site without disturbing establishing plants and also clearly define mow/low/no mow areas. Pigtails may be left in place throughout the winter months.*



**ADDRESS**  
721 Main St, Buffalo, NY 14203

**PHONE**  
(716) 852-7483

NORTH TONAWANDA BOTANICAL GARDEN LIVING SHORELINE

LANDSCAPE MANAGEMENT AND MOWING PLAN

Autumn 2021