

**Kellard Sessions Consulting, P.C.**  
**500 Main Street**  
**Armonk, New York 10504**

**LETTER OF TRANSMITTAL**

**(914)273-2323**  
**(914)273-2329 FAX**

TO: Planning Board Town of Ossining John-Paul Rodrigues Operations Center 101 Route 9A P.O. Box 1166 Ossining, NY 10562  Attn: Ingrid Richards, Chair	JOB NAME/NO: ART100	DATE: May 9, 2016
	RE: Artis Senior Living Town of Ossining	

WE ARE SENDING YOU ☒ Attached via Hand-Delivered, the following items:

- ☐ Shop drawings      ☐ Prints      ☐ Plans      ☐ Samples      ☐ Specifications  
☐ Copy of letter      ☐ Change order      ☐ \_\_\_\_\_


COPIES	DATE	NO.	DESCRIPTION
8	April 6, 2016		Wetland Mitigation Narrative
8	May 9, 2016		Swale Analysis
8	May 9, 2016		Off-Site Map

THESE ARE TRANSMITTED as checked below:

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> For approval           | <input type="checkbox"/> Approved as submitted    | <input type="checkbox"/> Resubmit _____ copies for approval   |
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| <input type="checkbox"/> For review and comment | <input type="checkbox"/> _____                    |   |

REMARKS:

COPY TO: Daniel A. Ciarcia, P.E. w/Enc., David H. Stolman, AICP, PP w/Enc.,  
Stephen Coleman w/Enc., Janet J. Giris, Esq. w/Enc., Max Ferentinos w/Enc.

  
SIGNED Brian Hildenbrand, P.E.

**ARTIS SENIOR LIVING  
WETLAND MITIGATION NARRATIVE  
April 6, 2016**

History

The applicant previously proposed mitigation on the adjoining property known as Section 90.15, Block 1, Lot 23 (84 Morningside Drive). Since that time, two things have occurred: (1) the owner of the adjoining property has informed the applicant and the Planning Board that they will not permit the measures previously proposed to be undertaken to the wetland on that property (the "Off-Site Wetland") to mitigate the impacts of the applicant's disturbance to on-site wetland/watercourse buffer area<sup>1</sup>; and (2) the Town's Freshwater Wetlands, Watercourses and Water Body Protection Law (Town Code Chapter 105) was amended by Local Law 7-2015, and as a result, the formerly unregulated Off-Site Wetland is now regulated, thereby increasing the amount of corresponding on-site buffer area proposed to be disturbed<sup>2</sup>. In response to these events, the applicant has modified the mitigation plan so that only on-site measures are now proposed.

Current Wetland Mitigation Plan

The current mitigation plan consists of four (4) components: (1) Invasive Species Removal and Monitoring; (2) Wetland/Watercourse Buffer Planting Plan; (3) Introduction of Permeable Pavement for all Walkways/Paths; and (4). Water Quality Treatment of Off-Site Stormwater Runoff.

1. Invasive Species Removal and Monitoring

A heavy stand of Japanese knotweed exists along a man-made berm at the northern border of the site. This invasive plant has completely taken over the area adjacent to the Town-regulated intermittent watercourse (the "Watercourse") and Off-Site Wetland located immediately north of the property line. The applicant is proposing a complete (manual) removal of the species and spot treatment with glyphosate, at the direction of the Town's Wetland Consultant. Once completely removed, clean soil will be introduced to the area to supplement the existing soil and the area will be planted with a dense palette of native trees, shrubs and groundcover.

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<sup>1</sup> The original mitigation plan included an invasive species removal program and native shrub, tree and meadow-grass planting on the adjoining property.

<sup>2</sup> Under prior Town Code Chapter 105, approximately 6,860 square feet of buffer area was proposed to be disturbed. Under current Town Code Chapter 105, approximately 24,773 square feet of buffer area is proposed to be disturbed.

The dense planting is designed to outcompete any residual invasive plants/seed stock that might have survived the invasive plant removal. In addition, the planting will help stabilize the berm area so that the potential for soil erosion is minimized or eliminated, thereby providing further protection of the adjacent intermittent watercourse and Off-Site Wetland.

This component of the mitigation plan also includes a 5 year invasive species monitoring program. This program will include the regular visual inspection of the area and immediate treatment and/or eradication of any invasive plant growth observed for a period of 5 years. The monitoring and treatment will insure that the invasive plants in this area will be permanently eliminated. As required by Town Code Section 105-10(C)(2), the applicant will submit written reports to the Planning Board or the Town Wetland Consultant) at a frequency to be determined by the Planning Board addressing the progress of the invasive species removal under the mitigation plan.

2. Wetland/Watercourse Buffer Area Mitigation Planting Plan (6,690 square feet)

The applicant is proposing to plant within the on-site buffer area 187 native trees, shrubs and groundcover plants, in the immediate area surrounding the northern and north-east/north-west property lines. An additional 59 trees and shrubs are proposed within the building courtyard area, which is within the buffer area. Sheets 5/9 and 6/9 illustrate the mitigation planting plan.

3. Permeable Pavement for Walkways and Paths (4,160 square feet)

Although the project's stormwater collection and treatment system will provide the required attenuation of (up to and including) the 100 year storm event, as well as the required water quality treatment, the current wetland mitigation plan includes the introduction of permeable pavement for the 1,040 linear feet of walkways and paths on the site. As a result, approximately 4,160 square feet originally proposed as impervious surface will now be pervious. The substitution of pervious surface will provide an additional water quality benefit to the underlying aquifer and receiving downstream waters. A detail of the permeable pavement is included on Sheet 8/9.

4. Water Quality Treatment of Off-Site Stormwater Runoff

Although it is not required, the applicant has included in the current wetland mitigation plan the installation of a water quality treatment structure (a "Downstream Defender") for the treatment of off-site stormwater runoff that currently drains through the site. As Sheet 6A/9 illustrates, a  $\pm 16.1$  acre area, including properties both north and south of

Morningside Drive, drains to the applicant's property, ultimately being piped through an existing culvert to the Town's drainage system within North State Road.

Presently, this off-site stormwater is piped to North State Road without the benefit of any water quality treatment. Under the applicant's current wetland mitigation plan this off-site stormwater run-off will be directed to the "Downstream Defender" water quality structure where it will be treated for pollutants including total suspended solids, phosphorus, nitrogen, floatable trash and petroleum products. The proposed "Downstream Defender" (4' diameter model) will treat off-site stormwater flows of up to the 1 year storm event. This will provide a significant water quality benefit compared to the current, untreated condition of the stormwater runoff from this ±16.1 acre off-site drainage area.

### Conclusion

The Town's Wetland Consultant has previously concluded that disturbance to on-site buffer area is a "necessary and unavoidable" impact of the project. Town Code Section 105-10(B)(2) provides that on-site mitigation "shall be the preferred approach." Under Town Code Section 105-10(B)(3), "mitigation for intrusion into buffer areas shall be such as to preserve the ecological characteristics and functions of the associated wetland."

The applicant has previously discussed with the Planning Board the fact that that site does not drain to the Off-Site Wetland or the Watercourse along the north property boundary. The applicant no longer proposes any disturbance or alteration to either the Off-Site Wetland or the Watercourse. The Town Wetland Consultant has confirmed that the already degraded buffer area on the site does not perform any ecological function for the corresponding Off-Site Wetland or Watercourse. The proposed disturbance to this buffer area will therefore have no impact on "the ecological characteristics and functions" of the Off-Site Wetland or Watercourse. Given that the project will not impact the Off-Site Wetland or Watercourse, and that the water quality of both on-site and off-site runoff will be improved, it is the professional opinion of Kellard Sessions Consulting, P.C. that the modified plan now proposed is an appropriate and reasonable on-site mitigation plan for the disturbance to the buffer area.

May 9, 2016

Planning Board  
Town of Ossining  
John-Paul Rodrigues Operations Center  
101 Route 9A  
P.O. Box 1166  
Ossining, New York 10562

Attn: Ingrid Richards, Chair

**RE: *Artis Senior Living***  
***Town of Ossining***

Dear Chair Richards:

The intent of this correspondence is to analyze the design and functionality of an open channel system to convey the off-site stormwater entering the project site at 553 North State Road. This analysis has been performed at the request of the Town of Ossining Planning Board.

The first step of this analysis is determining the size of channel needed to adequately convey the potential stormwater flow. Based on calculations found in Appendix IV of the SWPPP report by Kellard Sessions Consulting, P.C., dated (last revised) April 6, 2016, there is approximately 16.2 cfs of flow generated by 25-year storm event from the 16.2 acre contributing area.

The proposed open channel is assumed to be constructed in a uniform shape, therefore, allowing Manning's Equation to be used for sizing. Uniform open channel flow takes place whenever there is a constant volumetric flow rate of liquid through a section of channel that has a constant bottom slope, constant hydraulic radius (that is, constant channel size and shape), and constant channel surface roughness (constant Manning roughness coefficient). Under these conditions, the liquid will flow at a constant depth, often called the normal depth for the given channel and volumetric flow rate.

Ingrid Richards, Chair

May 9, 2016

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The Manning Equation for U.S. units is:  $Q = (1.49/n)A(R^{2/3})(S^{1/2})$ ,

Where:

Q = volumetric water flow rate passing through the stretch of channel, ft<sup>3</sup>/sec

A = cross-sectional area of flow perpendicular to the flow direction, ft<sup>2</sup>

S = bottom slope of channel, ft/ft (dimensionless)

n = Manning roughness coefficient (empirical constant), dimensionless

R = hydraulic radius = A/P in ft where

A = cross-sectional area of flow as defined above

P = wetted perimeter of cross-sectional flow area, ft

The above formula has been solved for this site in the “Swale Sizing Calculations” enclosed herewith. Considerations have been made to insure that NYSDEC regulations regarding freeboard and channel velocity have been met (Appendix L of the NYSDEC Stormwater Design Manual). The resulting channel would need to have a bottom width of 2.5' and be able to convey a flow depth of 1.0'.

The next step of this analysis is integrating the designed open channel into the project site. As shown the enclosed “Figure 1”, the existing topography rises in elevation from west to east along the northern property line. The elevation ranges from 346.0 at the existing culvert pipe to over 351.0 near North State Road. This presents a significant problem for open channel, since we need to maintain a 1.0% slope of positive pitch within the channel. The result of this is a relatively deep channel excavation for the entire run (over 6' near North State Road). Figure 1 shows that, when the recommended side slope of 4:1 is maintained, the channel will range from approximately 10.5' wide to 54' wide from bank to bank. This layout has also been illustrated on Figure 1.

Based on this analysis, it can be concluded that constructing an open channel system is not practical for this site. The area that would be encumbered by this practice would eliminate an access curb cut, parking, portion of the building and landscape screening. The open channel would essentially create more negative impacts than the proposed piped conveyance.

Ingrid Richards, Chair  
May 9, 2016  
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Please do not hesitate to contact me if you should have any questions.

Very truly yours,

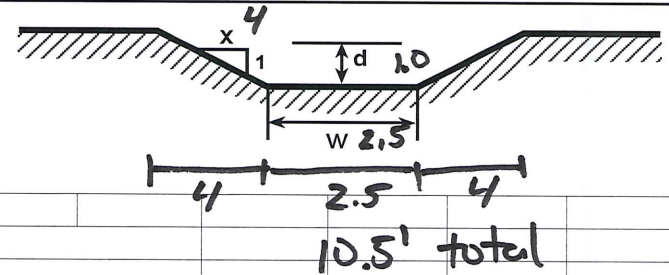
A handwritten signature in black ink, appearing to read "B. Hildenbrand". The signature is fluid and cursive, with a large initial "B" and a stylized "H".

Brian Hildenbrand, P.E.  
Kellard Sessions Consulting, P.C.

BH/pg

Enclosures

cc: Max Ferentinos  
Janet Giris, Esq.  
Daniel A. Ciarcia, P.E.  
David H. Stolman, AICP, PP  
Stephen Coleman



Project:	Artis Senior Living
Job #:	ART100
Date:	5/9/2016
By:	BJH
Checked:	

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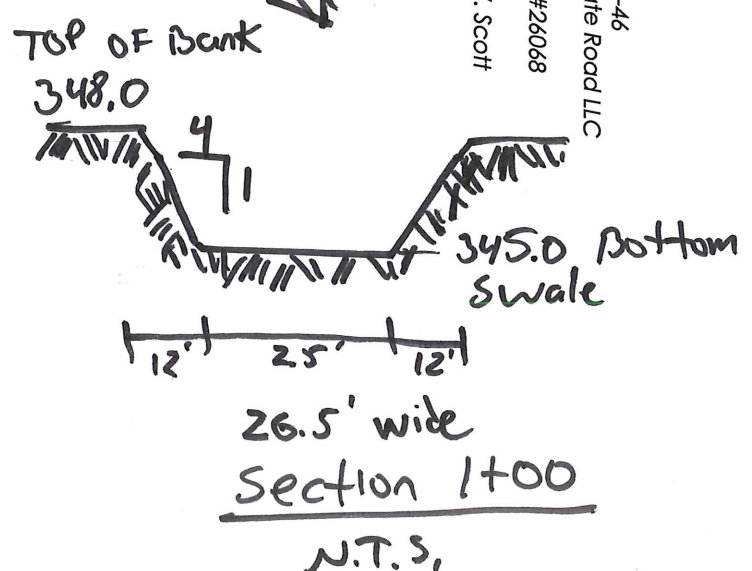
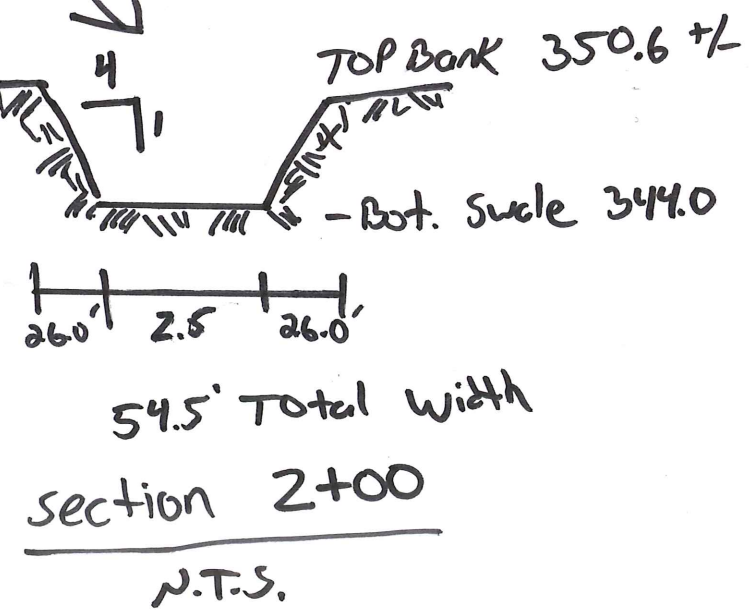
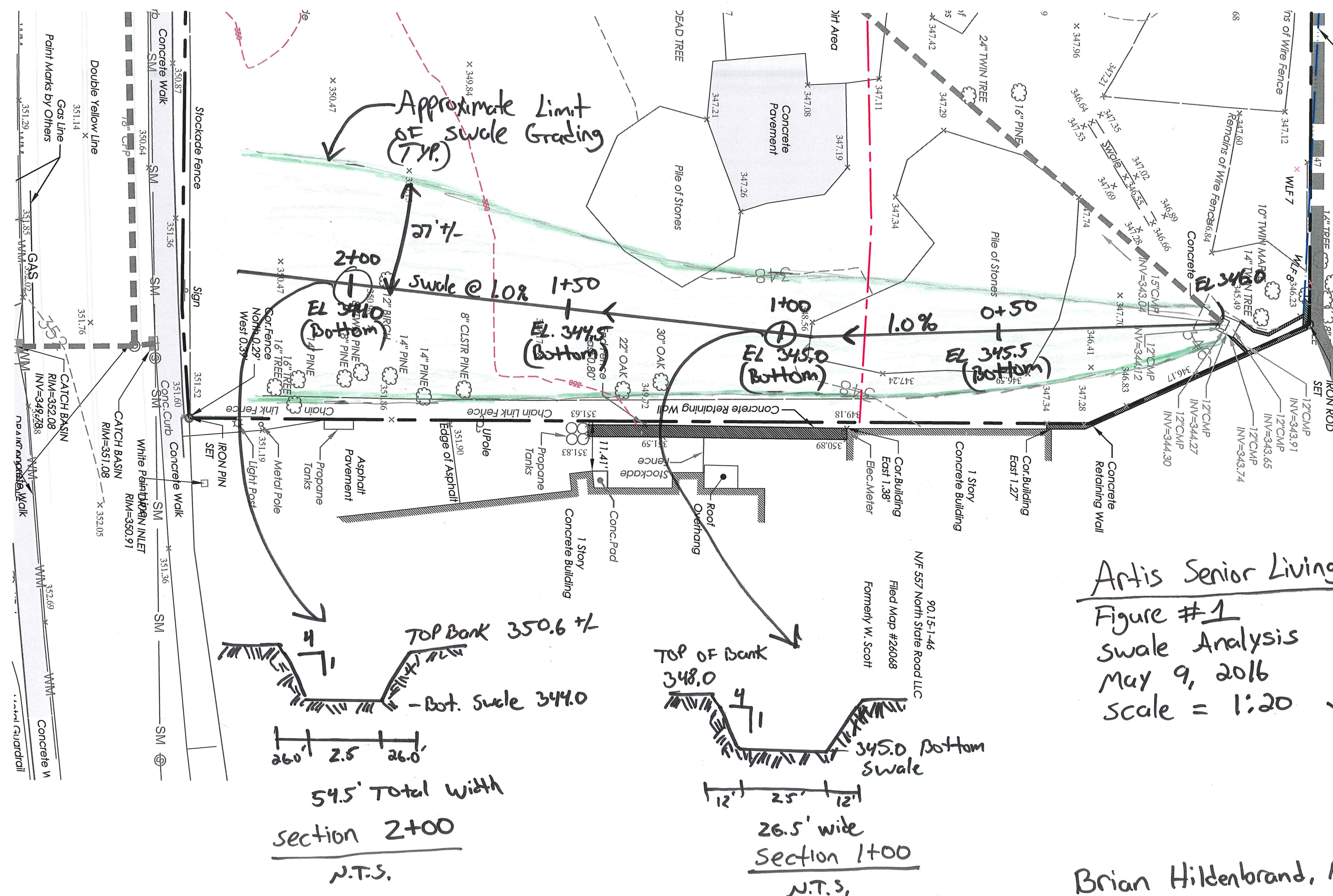
EXISTING TOWN  
REGULATED  
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Artis Senior Living  
Figure #1  
Swale Analysis  
May 9, 2016  
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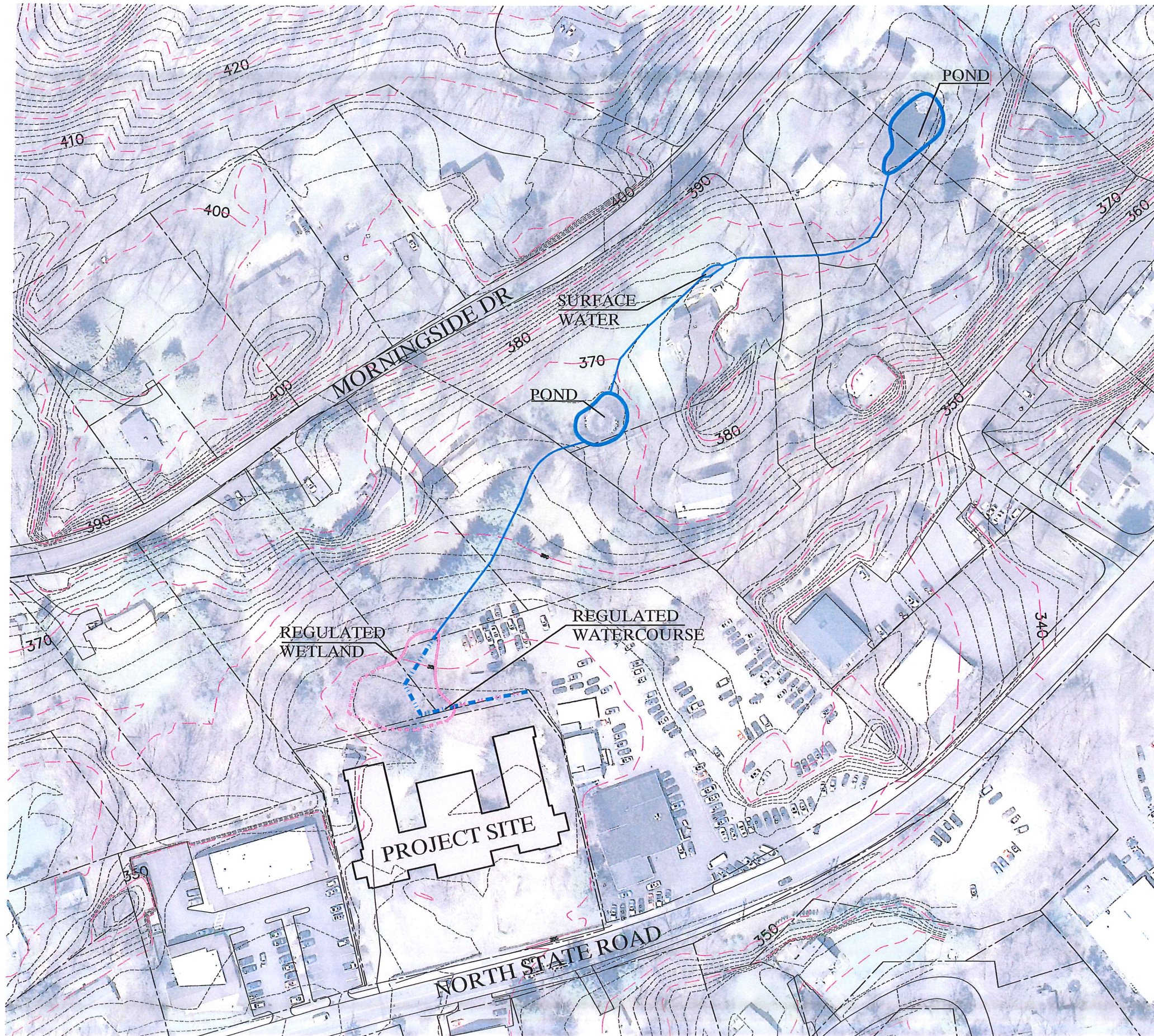


Brian Hildenbrand, P.E.



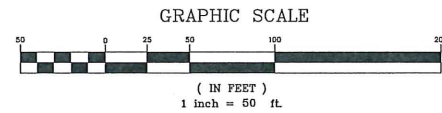


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- LEGEND**
- EXISTING PROPERTY LINE
  - EXISTING 10' CONTOUR
  - EXISTING 2' CONTOUR
  - APPROXIMATE LOCATION OF REGULATED WETLAND BOUNDARY
  - APPROXIMATE LOCATION OF OFFSITE POND AND CONNECTING CONVEYANCE

- GENERAL NOTES:**
- AERIAL PHOTOGRAPHY, PROPERTY LINES AND TOPOGRAPHY OBTAINED FROM WESTCHESTER COUNTY G.I.S. DATABASE. ALL INFORMATION SHOWN HEREON SHOULD BE CONSIDERED APPROXIMATE. SEE SITE PLANS FOR THIS PROJECT PREPARED BY KELLARD SESSION CONSULTING, P.C. FOR MORE INFORMATION.



<b>KELLARD SESSIONS</b> CONSULTING  ENGINEERING, LANDSCAPE ARCHITECTURE & PLANNING, P.C.  500 MAIN STREET ARMONK, N.Y. 10504 P: (914) 273-2323 F: (914) 273-2329 WWW.KELLARDS.COM	<b>OFF-SITE MAP</b>																							
	<b>ARTIS SENIOR LIVING</b>																							
	TOWN OF OSSINING WESTCHESTER COUNTY, NEW YORK																							
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UNAUTHORIZED ADDITIONS, MODIFICATIONS AND/OR ALTERATIONS TO THESE PLANS IS A VIOLATION OF SECTION 2205 OF THE NEW YORK STATE EDUCATION LAW