

**FLUSHING BAY**

**NOTES:**

1. HORIZONTAL CONTROL IS BASED ON NEW YORK STATE PLANE LONG ISLAND ZONE (NAD83). SEE DWG. MTA-2 FOR HORIZONTAL CONTROL INFORMATION.
2. ALL ELEVATIONS SHOWN HERE ARE IN FEET AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. THE INFORMATION ON THE EXISTING CONDITIONS IS BASED ON GROUND SURVEY PERFORMED BY NEWMARK ENGINEERING P.C. DURING MAY 2011 AND CAN ONLY BE CONSIDERED AS INDICATING GENERAL CONDITIONS OF THE VEGETATED AREA AT THAT TIME.
4. FOR PROPOSED PLANTING AND GRADING PLAN SEE DWG. MTA-3.
5. FOR SECTION A-A SEE DWG. MTA-4.
6. FOR GENERAL NOTES SEE DWG. MTA-2.

**LEGEND**

- EXISTING PHRAGMITES AUSTRALIS MONOCULTURE (1.04 ACRES)
- EXISTING SPARTINA ALTERNIFLORA TO BE PRESERVED. (0.42 ACRES)
- EXISTING MHW (2.68) AND MHHW (3.68)



**NEWMARK ENGINEERING, P.C.**  
 Land Surveying & Mapping-Civil-Structural-Vibration Monitoring

PREPARED BY \_\_\_\_\_ IN CHARGE  
 S.M. \_\_\_\_\_ DRAFTER  
 G.S.N. \_\_\_\_\_ CHECKER  
 M.B. \_\_\_\_\_  
 S.M. \_\_\_\_\_

ALL DIMENSIONS ARE IN FEET, UNLESS OTHERWISE NOTED.



CITY OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF BRIDGES  
 CONTRACT NO.  
 WETLANDS MITIGATION AT MTA/LIRR  
 ROOSEVELT AVENUE PROPERTY  
 BOROUGH OF QUEENS

FLUSHING BAY SALT MARSH RESTORATION  
 EXISTING CONDITIONS

DWG. NO. MTA-1	SCALE: 1"=40'	DATE: AUGUST 2011	SHEET NO. 1
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**GENERAL NOTES:**

1. THE VERTICAL DATUM REPRESENTS NORTH AMERICAN VERTICAL DATUM (NAVD 88) FEET WITH ALL EXISTING AND PROPOSED ELEVATIONS SURVEYED USING THIS DATUM.
2. EXISTING CONTOURS SHOWN MAY CHANGE AND ARE INFLUENCED BY WATER MOVEMENT AND SCOUR. CONTRACTOR SHALL FIELD VERIFY ELEVATION CONTOURS, HIGH WATER LINE AND CONSTRUCT WETLAND MITIGATION IN RELATION TO THE ACTUAL ELEVATION CONTOURS AT THE TIME OF CONSTRUCTION. THE TOTAL AREA OF MITIGATION INDICATED SHALL BE CONSTRUCTED.
3. 0.42 ACRES SHALL BE PLANTED AS LOW MARSH WITH SPARTINA ALTERNIFLORA AT (1) FOOT (6) INCH CENTERS BETWEEN ELEVATION 2.00 AND 2.68 FT.
4. 0.08 ACRES SHALL BE PLANTED AS HIGH MARSH WITH SPARTINA PATENS AND IVA FRUTESCENS AT (1) FOOT (6) INCH CENTERS BETWEEN ELEVATION 2.68 & 3.5 FT.
5. ALL OF HIGH MARSH/TRANSITION ZONE SHRUBS SHALL BE PLANTED IN RANDOM CLUMPS AT FIVE (5) FOOT AVERAGE SPACING VARYING FROM FOUR (4) TO EIGHT (8) FOOT CENTERS.
6. LOCATION OF CONSTRUCTION ACCESS ROAD AND LAYDOWN AREA SHALL BE CONSTRAINED TO THE AREA SHOWN.
7. NO AREAS OUTSIDE OF CONSTRUCTION ZONE SHALL BE DISTURBED.
8. CONTRACTOR SHALL IDENTIFY BOUNDARIES OF EXISTING VEGETATION AND PROTECT THESE AREAS WITH SILT FENCE PRIOR TO CONSTRUCTION AS SHOWN. CONTRACTOR SHALL REMOVE SILT FENCE ONE (1) YEAR FOLLOWING COMPLETION AND APPROVAL OF FINAL PLANTING.
9. EXCAVATION BELOW MEAN HIGH WATER (MHW) ELEVATION SHALL BE LIMITED TO PERIODS OF LOW TIDE ONLY. TO MINIMIZE EROSION AND TURBIDITY, EXCAVATED MATERIAL SHALL BE TESTED TO NEW YORK STATE DEC STANDARDS. SEDIMENT CHEMISTRY TESTING RESULTS SHALL BE SUBMITTED IN TRIPLICATE TO DEC NO LESS THAN THREE WEEKS PRIOR TO THE BEGINNING OF CONSTRUCTION TO OBTAIN APPROVAL FOR THE USE OF THE MATERIAL ON SITE. IF FOUND TO BE SUITABLE, SOILS MAY BE USED AS BACKFILL IN THE COASTAL SHRUB ZONE. IF THE MATERIAL IS FOUND TO BE UNSUITABLE FOR USE AS BACKFILL ON SITE, THE MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED UPLAND DISPOSAL SITE, AS SPECIFIED.
10. EXCAVATED MATERIAL CONTAINING RHIZOMES AND ROOT MASS FROM PHRAGMITES AND OTHER PLANTS SHALL BE REMOVED OFF-SITE TO AN APPROVED DISPOSAL SITE.
11. FOLLOWING EXCAVATION OF SOILS AND SITE GRADING IN MITIGATION AREA ENGINEER WILL DETERMINE SUITABILITY OF SOIL SUBSTRATE FOR PLANTING. PLANTING AREA WILL REQUIRE A MINIMUM TWO WEEK PERIOD TO STABILIZE AND EXPERIENCE TIDAL FLUSHING TO AERATE AND REMOVE BY-PRODUCTS OF ANAEROBIC CONDITIONS. CONTRACTOR SHALL VERIFY PLANTING ELEVATIONS AFTER THIS PERIOD BEFORE INSTALLING PLANT MATERIAL.
12. FOLLOWING SITE GRADING, DEBRIS EXCLUSION FENCE SHALL BE INSTALLED AT THE AREAS INDICATED ON THE PLANS. STRAY BALE DIKE SHALL ALSO BE INSTALLED ALONG LANDWARD SIDE OF EXCLUSION FENCE FOLLOWING COMPLETION AND ACCEPTANCE OF FINAL GRADING. STRAY BALE DIKE AND ANY ACCUMULATED SEDIMENT, DEBRIS, TIDE BORNE WRACK AND CSO FLOATABLE SHALL BE REMOVED.
13. PRIOR TO PLANTING INTERTIDAL MARSH,  
2-INCHx2-INCHx6-FOOT HARDWOOD STAKES SHALL BE INSTALLED TO FOOT ON CENTER AS SHOWN, TO PROTECT PLANTINGS AT THE END OF EACH DAY, PLANTED AREAS SHALL BE ENCLOSED BY GOOSE EXCLUSION LINES AS SHOWN AND SPECIFIED GOOSE FENCING SHALL EXTEND THROUGH ALL ZONES.
14. SPECIFIED PLANTINGS OR SEEDING FOR EACH ZONE SHALL BE INSTALLED AS INDICATED IN THE SCHEDULES ON THIS SHEET.
15. PLANTS SHALL BE HEALTHY, VIGOROUS GROWING SPECIMENS, EXHIBITING UNIFORM GROWTH AND FORM CHARACTERISTIC OF THEIR SPECIES. PLANTS SHALL BE FREE OF CHLOROSIS, YELLOWING, BLEMSHED OR DAMAGED PARTS.
16. SPARTINA SHALL BE ACCLIMATED TO THE SALINITY OF FLUSHING BAY FOR THREE WEEKS PRIOR TO DELIVERY TO THE SITE. THE NURSERY SHALL SUBMIT AN AFFIDAVIT OF THE SALINITY OF THE DELIVERED PLANTS.
17. PLANTS SHALL BE KEPT MOIST DURING DELIVERY TO CONSTRUCTION SITE. TRANSPLANTS SHALL BE PROTECTED FROM DRYING OUT DURING TRANSPORT TO THE SITE AND DURING STORAGE AT THE CONSTRUCTION SITE. ONLY FRESHWATER SHALL BE USED TO IRRIGATE TRANSPLANTS.
18. ALL PLANTS WILL BE SUBJECT TO TAIAGATE INSPECTION UPON ARRIVAL AT CONSTRUCTION SITE BY ENGINEER. ALL PLANTS FAILING TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED BY THE ENGINEER. SUCH PLANTS SHALL BE REMOVED FROM CONSTRUCTION SITE AND REPLACED AT NO ADDITIONAL COST TO THE STATE.
19. EXISTING CONDITIONS IN THE FIELD SHALL BE VERIFIED PRIOR TO THE COMMENCEMENT OF WORK.
20. ALL AREAS NOT INCLUDED IN THIS CONTRACT THAT ARE DISTURBED AND/OR DAMAGED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.

**SUGGESTED CONSTRUCTION SEQUENCE:**


1. SCHEDULE PRECONSTRUCTION MEETING ONSITE.
2. PERFORM SITE INSPECTION PRIOR TO COMMENCEMENT OF WORK.
3. ESTABLISH STAGING AREA, FIELD OFFICE, AND CONSTRUCTION ENTRANCES.
4. INSTALL SILT FENCE TO ACT AS TEMPORARY VEGETATION PROTECTION BARRIER ALONG ACCESS PATHS, ALONG EXISTING SPARTINA ALTERNIFLORA, AND ALONG LIMITS OF DISTURBANCE AS INDICATED ON THE PLAN.
5. CLEAR AND GRUB WITHIN THE LIMITS OF THE SILT FENCES TO ESTABLISH ACCESS PATHS.
6. CONSTRUCT TURBIDITY CURTAINS AT LOCATIONS SHOWN ON THE PLANS.
7. BEGIN OPERATION TO REMOVE AND DISPOSE OF HAND MADE DEBRIS AND CLEAR AND GRUB EXISTING VEGETATION.
8. BEGIN EARTHWORK OPERATIONS TO CUT AND GRADE PROPOSED WETLAND MITIGATION AREA.
9. INSTALL GOOSE CONTROL FENCE AT LOCATION SHOWN ON THE PLANS. PLANTING OPERATIONS SHALL BE BETWEEN MAY 1 AND JULY 1 OF EACH YEAR.
11. ONCE PLANTING IS COMPLETE AND APPROVED, REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROLS, AND RESTORE CONSTRUCTION ENTRANCES AND ANY OTHER DAMAGED AREAS TO THE ORIGINAL STATE.
12. PERFORM FINAL SITE CLEAN UP AND CONTINUE POST CONSTRUCTION SITE MONITORING PROGRAM AS APPROVED.

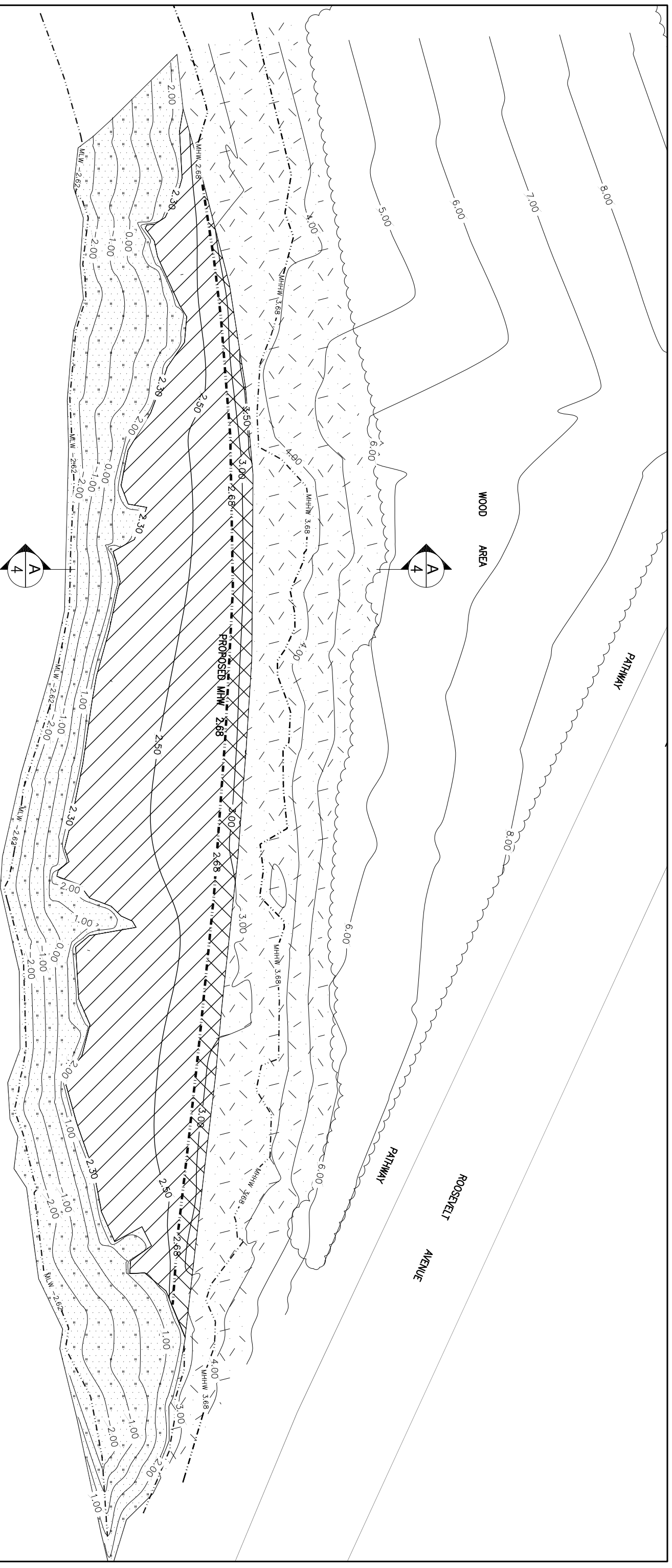
**NEWMARK ENGINEERING, P.C.**  
Land Surveying & Mapping-CM-Structural-Vibration Monitoring

PREPARED BY \_\_\_\_\_ S.M. \_\_\_\_\_ DRAFTER \_\_\_\_\_ M.B. \_\_\_\_\_  
IN CHARGE \_\_\_\_\_ G.S.N. \_\_\_\_\_ CHECKER \_\_\_\_\_ S.M. \_\_\_\_\_  
DESIGNER



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CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION DIVISION OF BRIDGES			
CONTRACT NO.			
WETLANDS MITIGATION AT MTA/LIRR ROOSEVELT AVENUE PROPERTY BOROUGH OF QUEENS			
FLUSHING BAY SALT MARSH RESTORATION GENERAL NOTES AND SURVEY CONTROL			
DWG. NO. MTA--2	SCALE:	DATE: AUGUST 2011	SHEET NO. 2

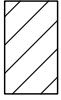

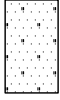
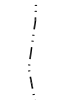



**NOTES:**

1. HORIZONTAL CONTROL IS BASED ON NEW YORK STATE PLANE LONG ISLAND ZONE (NAD83). SEE DWG. MTA-2 FOR HORIZONTAL CONTROL INFORMATION.
2. ALL ELEVATIONS SHOWN HERE ARE IN FEET AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVVD88).
3. FOR SECTION A-A SEE DWG. MTA-4
4. FOR PROPOSED PLANTING SCHEDULES SEE DWG. MTA-5.
5. CONTRACTOR TO INSTALL WATERFOWL EXCLUSION FENCE AROUND PERIMETER OF SITE. FOR DETAILS SEE DWG. MTA-7
6. FOR PLANTING COORDINATES SEE DWG. MTA-8.

**FLUSHING BAY**

**LEGEND**

-  PROPOSED AREA OF LOW MARSH RESTORATION (0.42 ACRES) SPARTINA ALTERNIFLORA
-  PROPOSED AREA OF HIGH MARSH RESTORATION (0.08 ACRES) SPARTINA PATENS
-  EXISTING SPARTINA ALTERNIFLORA TO BE PRESERVED (0.42 ACRES)
-  EXISTING MHW AND MHHW
-  PROPOSED MHW

**NEWMARK ENGINEERING, P.C.**  
 Land Surveying & Mapping-CM-Structural-Vibration Monitoring

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CONTRACT NO.  
 WETLANDS MITIGATION AT MTA/LIRR  
 ROOSEVELT AVENUE PROPERTY  
 BOROUGH OF QUEENS

FLUSHING BAY SALT MARSH RESTORATION  
 PROPOSED GRADING PLAN

DWG. NO. MTA-8	SCALE: 1"=40'	DATE: AUGUST 2011	SHEET NO. 8
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**PLANTING SCHEDULE**

ZONE	Botanical Name	Common Name	Size	Plant Spacing	Quantity	Planting Period	Planting Elevation
Low marsh 0.420 ac.	Spartina alterniflora	Salt marsh cordgrass	2-in plug	1.5 ft oc	9525	May 1 – June 30	2.00 – 2.68 ft.
Hi marsh 0.080 ac.	Spartina patens	Salt hay	2-in plug	1.5 ft oc	1548	May 1 – June 30	2.68 – 3.50 ft.

**NOTES:**

1. FOR PROPOSED GRADING PLAN SEE DWG. MTA-3.

**TRANSITION ZONE AND HIGH MARSH PLANTING SCHEDULE**

ZONE	Botanical Name	Common Name	Size	Plant Spacing	Quantity	Planting Period	Planting Elevation
High marsh	Iva frutescens	Marsh elder	1 Gal.cont.	5 ft oc	48	April 1 – June 30	Above 2.68 ft.

**TEMPORARY COVER GRASS SEEDING SCHEDULE**

Botanical Name	Common Name	Percent Mix	Percent Minimum Purity/Germination	Seeding Rate	Planting Period
Lolium multiflorum	Annual Rye Grass	100%	98% / 90%	25 lbs/ acre	April 1 – October 15



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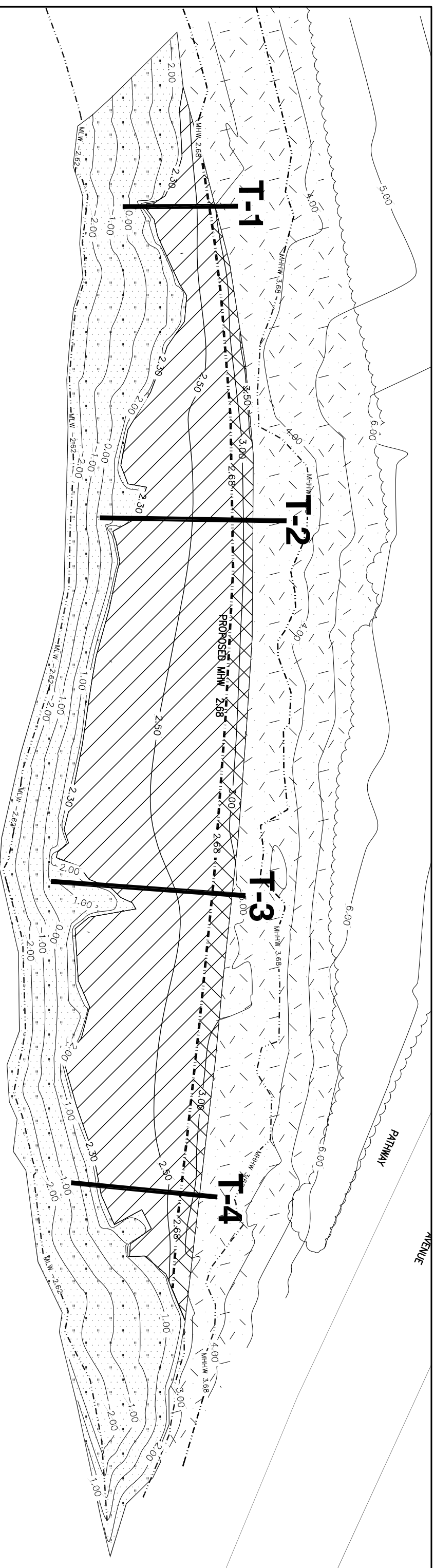


CITY OF NEW YORK  
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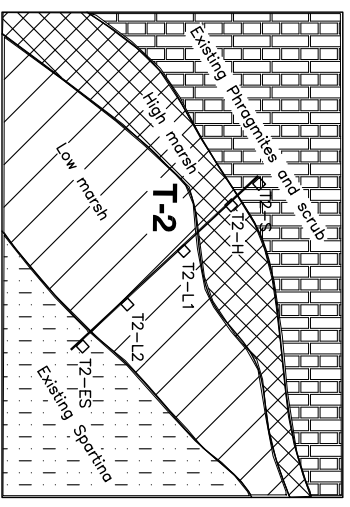
CONTRACT NO.  
WETLANDS MITIGATION AT MTA/LIRR  
ROOSEVELT AVENUE PROPERTY  
BOROUGH OF QUEENS

FLUSHING BAY SALT MARSH RESTORATION  
PLANTING SCHEDULE

DWG. NO. MTA-5      SCALE:      DATE: AUGUST 2011      SHEET NO. 5



DETAIL OF TYPICAL TRANSECT WITH FIVE QUADRATS AS SHOWN



1. ESTABLISH TRANSECTS AT MAXIMUM 150FT. APART (FOUR TOTAL)
2. MARK ENDS OF TRANSECT WITH 2 X 2 WOODEN STAKES AND SURVEY
3. ESTIMATE PERMANENT QUADRATS FOR EACH ZONE
4. VISIT EACH TRANSECT ANNUALLY, AND COLLECT DATA ON HEALTH, VIGOR, AND COVERAGE OF SPECIES.
5. COMPLETE REPORT FOR SUBMISSION TO NYSDEC, WITH PHOTOGRAPHIC DOCUMENTATION.

**FLUSHING BAY**

NYSDEC WETLAND MONITORING REQUIREMENTS\*

LENGTH OF SHORELINE	NO. OF TRANSECTS	1 m2 QUADRATS	REMARKS
450 l.f.	4 (1 per 150')	20 (5 per transect)	Once annually,
(see sheet 3)	equally spaced	1 scrub, 1 high marsh, 2 low marsh, 1 ex. marsh	mid-August to mid-September

\* NEW YORK STATE SALT MARSH RESTORATION AND MONITORING GUIDELINES prepared by: Nancy L. Niedowski, for the: New York State Dept of State, Division of Coastal Resources Bureau of Marine Resources 205 N. Belle Meade Road, E. Setauket, NY 11733

**MONITORING PLAN**

**NEWMARK ENGINEERING, P.C.**  
Land Surveying & Mapping-Civil-Structural-Vibration Monitoring

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DESIGNER



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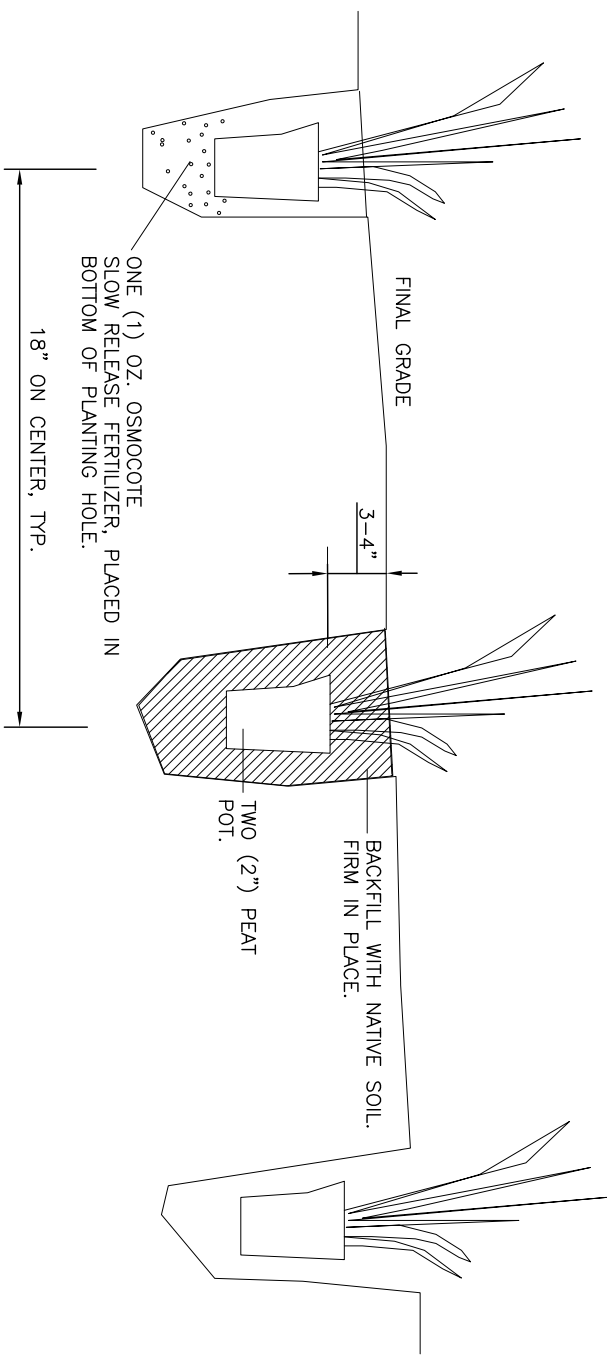


CITY OF NEW YORK  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF BRIDGES

WETLANDS MITIGATION AT MTA/LIRR  
ROOSEVELT AVENUE PROPERTY  
BOROUGH OF QUEENS

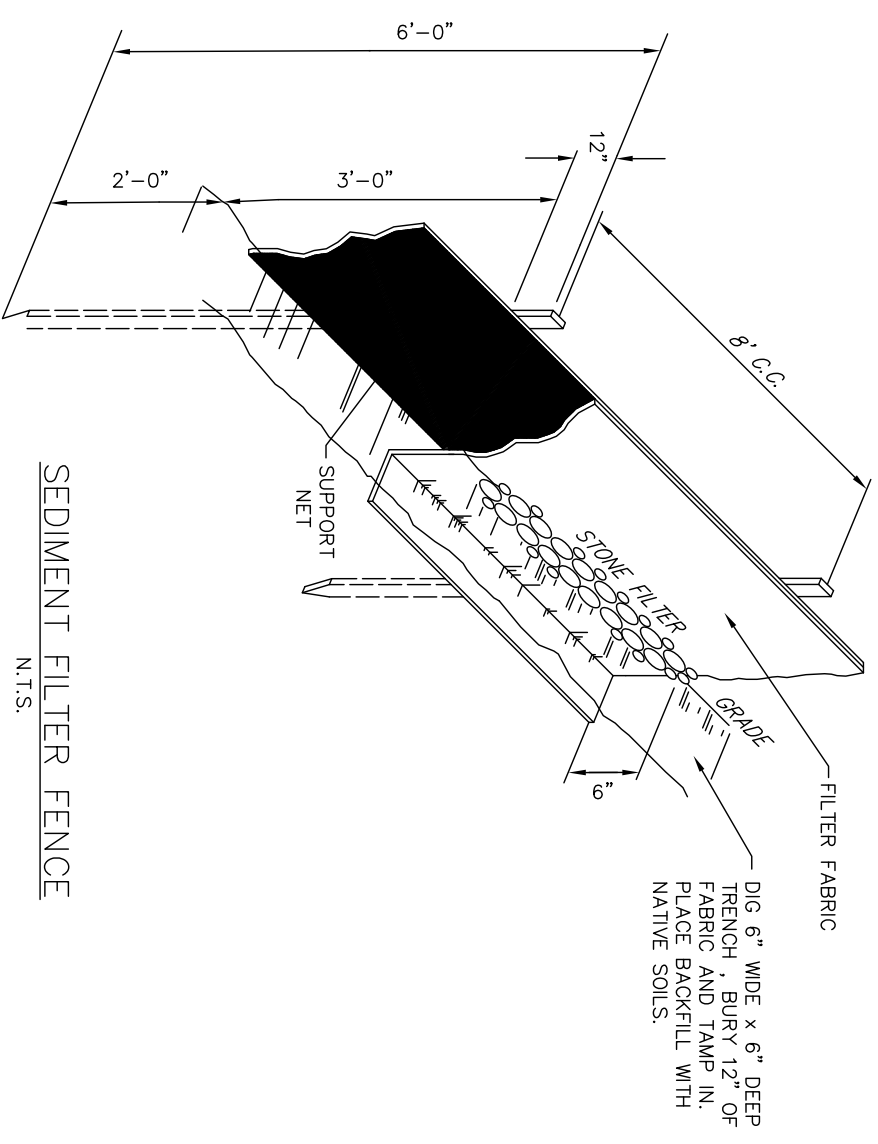
FLUSHING BAY SALT MARSH RESTORATION  
WETLAND MONITORING PLAN

DWG. NO. MTA-6 SCALE: 1"=40' DATE: AUGUST 2011 SHEET NO. 6



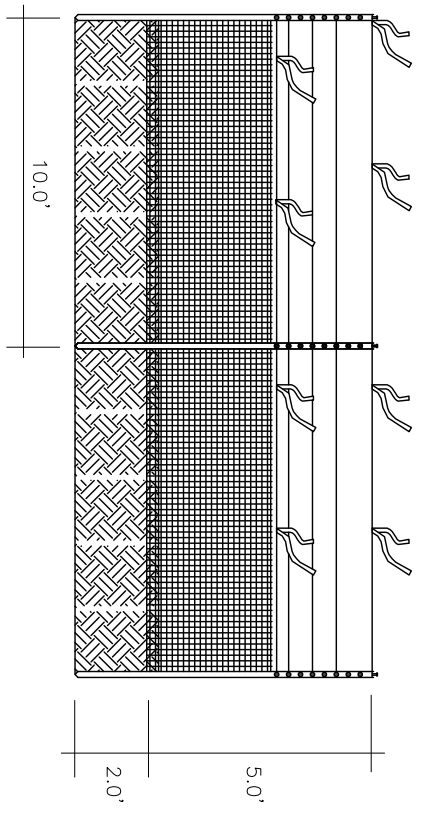
**PLANTING DETAIL AND ELEVATION**

N.T.S.



**SEDIMENT FILTER FENCE**

N.T.S.



**WATERFOWL EXCLUSION FENCE ELEVATION**

**GENERAL PLANTING NOTES**


1. ALL PLANT MATERIAL SHALL BE TRUE TO NAME AND SIZE IN CONFORMITY WITH THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK AND SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY. ALL PLANTS SHALL HAVE NORMAL WELL-DEVELOPED BRANCHES AND VIGOROUS ROOT SYSTEMS. HEALTHY, VIGOROUS, FREE FROM DEFECTS, DISTIGURING KNOTS, ABRASIONS OF THE BARK, SUNSCALD INJURIES, PLANT DISEASES, INSECT EGGS, BORERS AND ALL OTHER FORMS OF INFESTION. ALL PLANTS SHALL BE NURSERY GROWN WITHIN THE MID-ATLANTIC REGION.
2. ALL PLANT MATERIAL SHALL BEAR THE SAME RELATION TO FINISHED GRADE AS IT BORE TO EXISTING GRADE AT THE NURSERY.
3. EXISTING VEGETATION TO REMAIN SHALL BE PROTECTED WITH APPROPRIATE MEASURES DURING CONSTRUCTION. EXISTING LARGE CALIPER TREES SHALL REMAIN WHERE INDICATED ON THE PLANS AND SHALL BE IDENTIFIED IN THE FIELD PRIOR TO CONSTRUCTION.
4. PROPERTY LINES AND ALL UTILITIES MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION OR INSTALLATION OF SEEDING OR PLANTING.
5. EXCAVATION NEAR EXISTING UTILITIES SHALL BE CAREFULLY PERFORMED BY HAND. NOTIFY ALL AFFECTED UTILITIES PRIOR TO DIGGING.
6. THIS PLAN IS TO BE USED FOR PLANTING PURPOSES ONLY. THE CONTRACTOR SHOULD EXAMINE ALL ENGINEERING AND SURVEY DRAWINGS AND FIELD CONDITIONS FOR ALL UTILITIES, DRAINS, EASEMENTS, ETC. AND NOTIFY THE OWNER ABOUT ANY DISCREPANCIES BEFORE STARTING WORK.

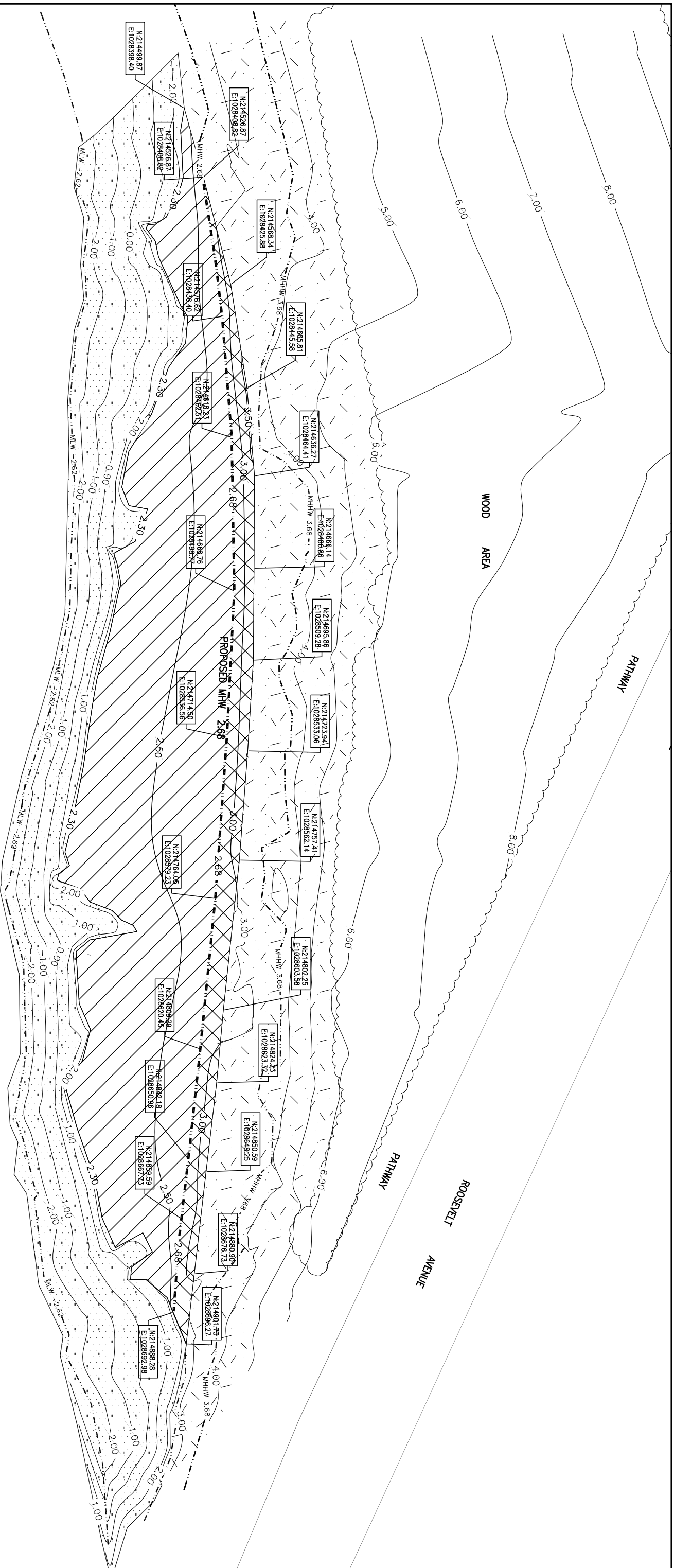
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CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION DIVISION OF BRIDGES			
CONTRACT NO.			
WETLANDS MITIGATION AT MTA/LIRR ROOSEVELT AVENUE PROPERTY BOROUGH OF QUEENS			
FLUSHING BAY SALT MARSH RESTORATION PLANTING DETAILS			
DWG. NO. MTA-7	SCALE:	DATE: AUGUST 2011	SHEET NO. 7



**FLUSHING BAY**


NOTES:  
 1. HORIZONTAL CONTROL IS BASED ON NEW YORK STATE PLANE LONG ISLAND ZONE (NAD83). SEE DWG. MTA-2 FOR HORIZONTAL CONTROL INFORMATION.

**NEWMARK ENGINEERING, P.C.**  
 Land Surveying & Mapping-CM+ Structural-Vibration Monitoring

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 DESIGNER \_\_\_\_\_ S.M. DRAFTER  
 G.S.N. CHECKER \_\_\_\_\_ M.B.  
 S.M.



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 <b>TULLY</b> <small>CONSTRUCTION CO. INC.</small> <small>FLUSHING, NY 718-442-7000</small>			
CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION DIVISION OF BRIDGES			
CONTRACT NO.			
WETLANDS MITIGATION AT MTA/LIRR ROOSEVELT AVENUE PROPERTY BOROUGH OF QUEENS			
<b>FLUSHING BAY SALT MARSH RESTORATION          PROPOSED LOCATION PLAN</b>			
DWG. NO. MTA-8	SCALE: 1"=40'	DATE: AUGUST 2011	SHEET NO. 8