

PLANS FOR UMBRELLA MITIGATION BANK AND PERMITTING BUSH TERMINAL PIER 7

1ST AVENUE & 43RD STREET BROOKLYN, NY 11232

DECEMBER 12, 2022



LOCATION MAP
SCALE 1"=200'

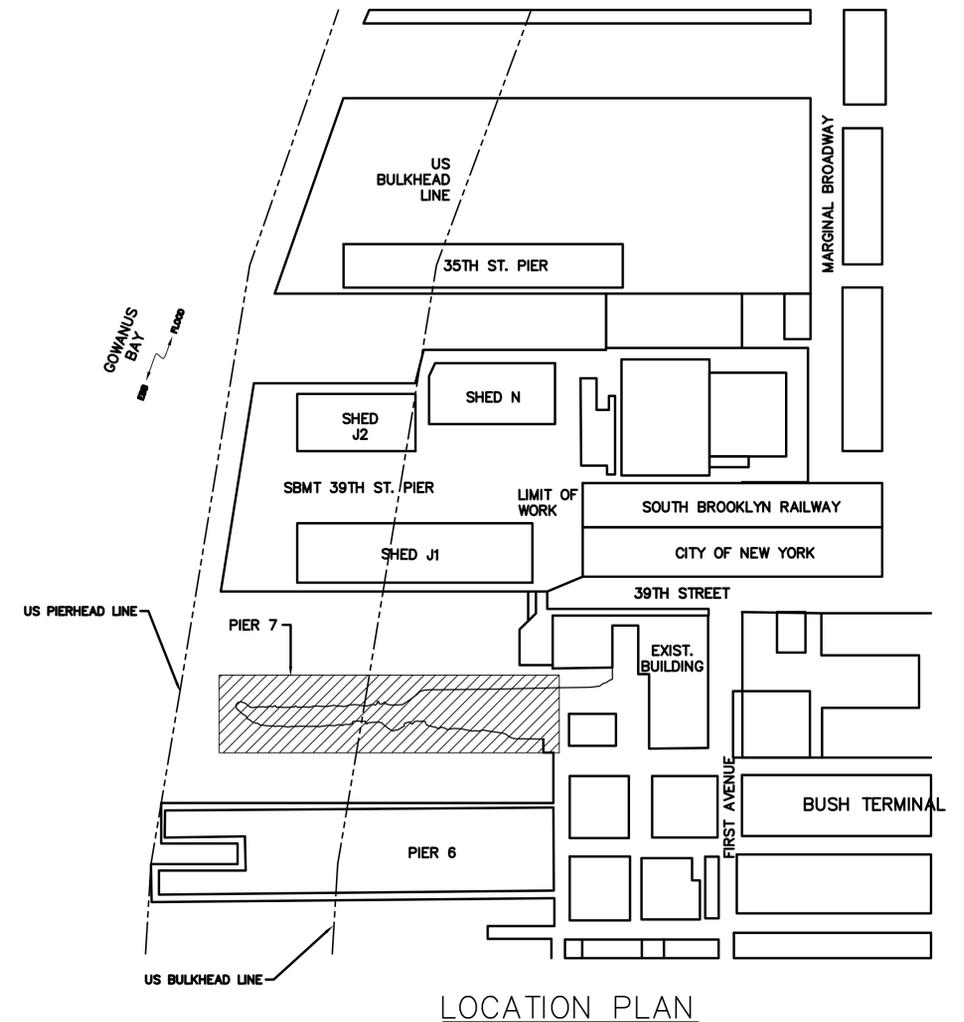
OWNER:
NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ONE LIBERTY PLAZA, 14TH FLOOR
NEW YORK, NY 10006

PREPARED BY
JACLYN J. FLOR, P.E., P.P., C.M.E.
CONSULTING ENGINEER

LICENSED PROFESSIONAL ENGINEER
STATE OF N.Y. LICENSE No. G101540
GENUITY INFRASTRUCTURE
CERTIFICATE OF AUTHORIZATION 0017153



GENUITY
INFRASTRUCTURE



LOCATION PLAN

LOCATION OF UTILITIES SHOWN ON THE PLANS ARE PLOTTED FROM AVAILABLE DATA ON FILE WITH THE UTILITY COMPANIES AND ARE NOT WARRANTED AS TO EXACTNESS. CONTRACTOR IS TO DETERMINE EXACT LOCATION AND DEPTH OF UTILITIES AT ALL CROSSINGS PRIOR TO CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

PRIOR TO DIGGING CALL 1-800-962-7962

PLAN INDEX

SHEET NUMBER	SHEET TITLE	DRAWING NO
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PROJECT NO. WSPG-00020

DRAWING

CVR

SHEET NO.

1 OF 11

GENERAL NOTES:

- 1. VERTICAL DATUM - NAVD 1988 AND HORIZONTAL DATUM - NY LONG ISLAND STATE PLANE COORDINATE SYSTEM NAD83 (2011); BASED ON GPS OBSERVATIONS BY MATRIX NEW WORLD ON 05/12/2022 AND REFERRING TO LEICA SMARTNET CONTINUOUSLY OPERATING REFERENCE STATION (CORS) NETWORK, NATIONAL GEODETIC SURVEY MONUMENT: CORS STATION "NYCI, NYVH, NYBR".

SCHEDULE AND COORDINATION:

- 10. REGULAR WORKING HOURS IN THE BOROUGH OF BROOKLYN FOR THIS PROJECT ARE DEFINED AS MONDAY THROUGH FRIDAY: WORK HOURS: 7:00AM TO 6:00PM ROAD CLOSURE: NOT ANTICIPATED

PREPARATION:

- 17. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE OF ALL ABOVE GROUND AND UNDERGROUND UTILITIES IN THE PROJECT AREA.

- 20. CONTRACTOR SHALL VIDEO AND TAKE PHOTOGRAPHS OF ALL AREAS WITHIN THE LIMIT OF WORK PRIOR TO BEGINNING CONSTRUCTION. THE VIDEO SHALL BE PROVIDED ON USB FLASH DRIVE. PHOTOGRAPHS SHALL BE DIGITAL, PRINTED AND ELECTRONIC COPIES TO BE PROVIDED. THE FLASH DRIVE AND PHOTOS WILL BE PROVIDED TO THE ENGINEER PRIOR TO CONSTRUCTION. THE COST FOR THE FLASH DRIVE AND PHOTOGRAPHS SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS SCHEDULED IN THE BID FORM.

GENERAL CONSTRUCTION:

- 25. THE CONTRACTOR SHALL LEGALLY REMOVE REMNANT PIER DEBRIS DOWN TO THE LITTORAL ZONE LOWER LIMIT TAKEN AT ELEVATION -8.61 FT (NAVD88), INCLUDING DEBRIS WHICH HAS COLLAPSED OUTSIDE OF THE LIMITS OF THE ORIGINAL PIER OUTLINE AS INDICATED. DEBRIS TO BE REMOVED SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO ALL MANNER OF REMNANT FILL INCLUDING: CONCRETE: DEBRIS, SLABS, GRADE BEAMS, PEDESTALS, PIERS, SEAWALLS, FOUNDATIONS, DEADMEN, DRAINAGE STRUCTURES, ETC.

- RECEIVE ALL DIRECTIONS OR INSTRUCTIONS IN WRITING. VERBAL DIRECTION FROM THE OWNER, OWNER'S REPRESENTATIVE, OR THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF THIS RESPONSIBILITY.

- EXCAVATION ON-SITE OR WITHIN R.O.W. (800) 962-7962

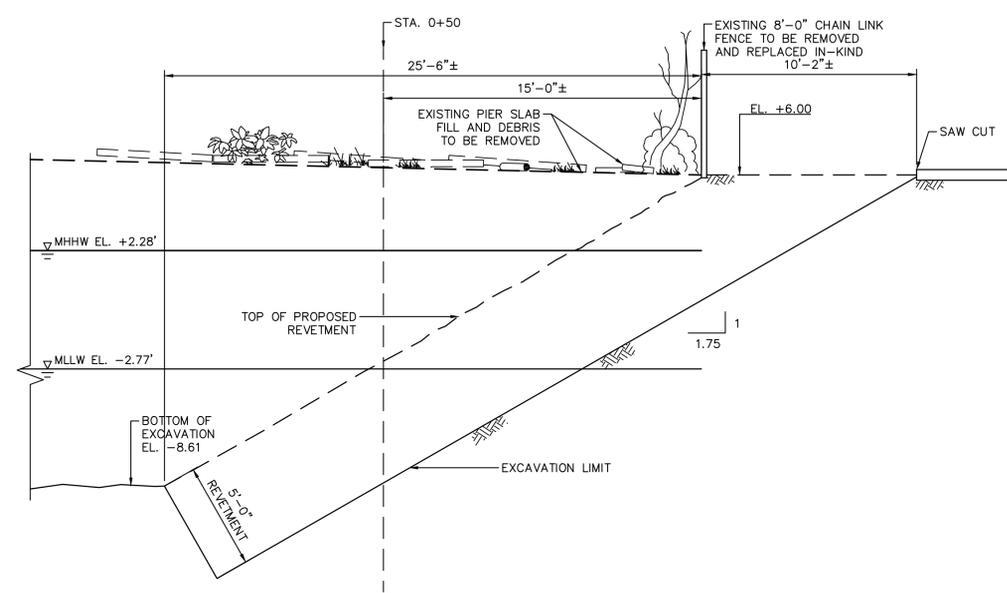
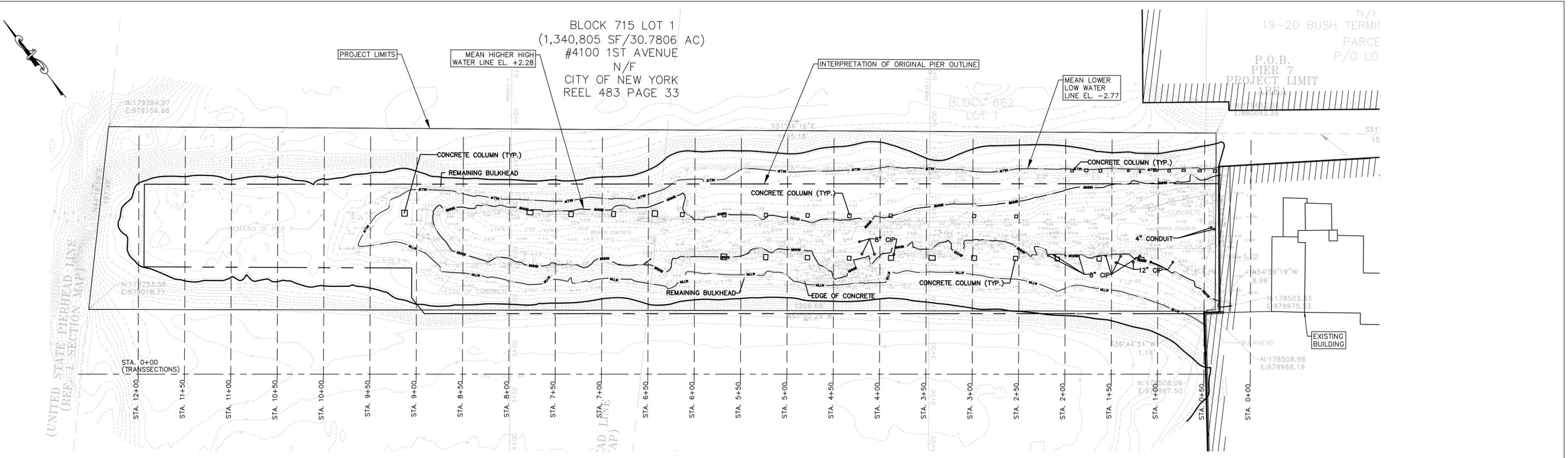
ARMOR STONE REVETMENT

- 50. BEDDING MATERIAL SHALL CONSIST OF WASHED CRUSHED STONE AND SHALL BE FREE OF ORGANIC MATTER, BITUMINOUS MATERIALS, AND OTHER DELETERIOUS PARTICLES.

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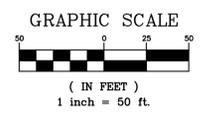
Table with columns for REV. NO., DATE, DRWN, CHKD, REMARKS, DESIGNED BY, DRAWN BY, SHEET CHK'D BY, CROSS CHK'D BY, APPROVED BY, DATE, ENGENUITY INFRASTRUCTURE logo, GENERAL NOTES AND LEGEND, BUSH TERMINAL PIER 7 NEW YORK ECONOMIC DEVELOPMENT CORP., one LIBERTY PLAZA, 14TH FLOOR NEW YORK, NY 10006, JACLYN J. FLOR, P.E., P.P., C.M.E CONSULTING ENGINEER, LICENSURED PROFESSIONAL ENGINEER STATE OF NY LICENSE NO. G101540 CERTIFICATE OF AUTHORIZATION 0017153, PROJECT NO. WSPG-00020, DRAWING GN, SHEET NO. 2 OF 11, DATE 11/2/2022

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REFERENCE DATUM	
LEVEL	NAVD88
MHHW	+2.28
MHW	+1.96
MLW	-2.57
MLLW	-2.77
LOWER LITTORAL LIMIT	-8.61

SECTION AT INSHORE END OF PIER
SCALE: 1/4"=1'
0 2 4 6



REV. NO.	DATE	DRWN	CHKD	REMARKS
2	12/12/22	MPK	STA	REVISED NYEDC ADDRESS
1	11/2/22	MPK	STA	REVISED TIDAL DATUMS

DESIGNED BY: JJF
DRAWN BY: JWP
SHEET CHK'D BY: JJF
CROSS CHK'D BY: STA
APPROVED BY: JJF
DATE: NOVEMBER 2, 2022

ENGENUITY INFRASTRUCTURE
GALLERIA: 2 BRIDGE AVE., SUITE 323
RED BANK, NJ 07701
732.741.3176
ENGENUITYNJ.COM

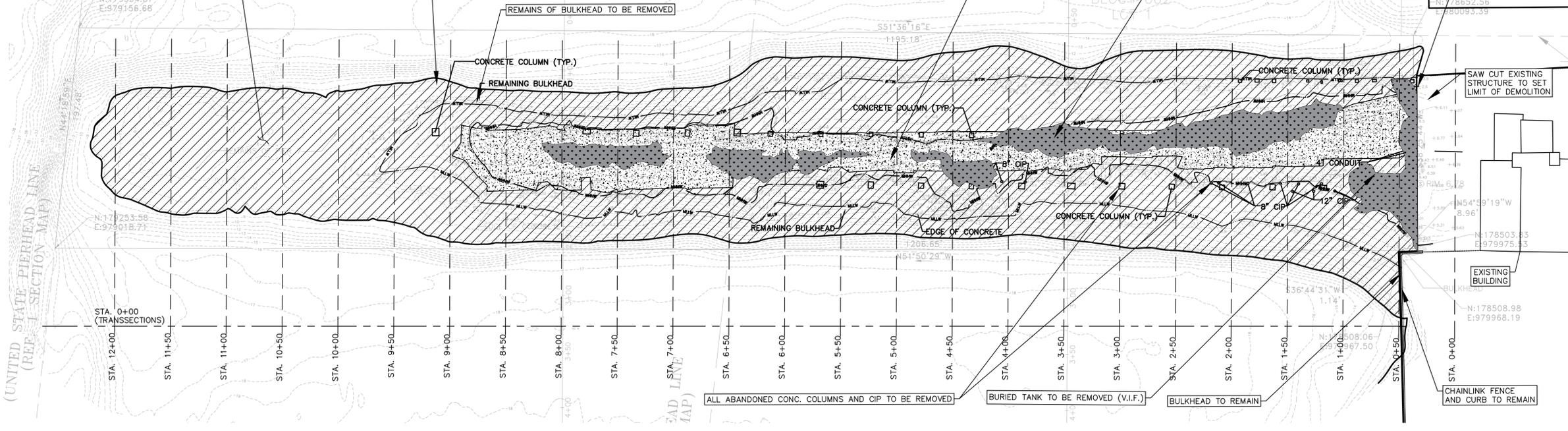
EXISTING CONDITIONS
BLOCK 715 LOT 1
1ST AVENUE & 43RD STREET
BROOKLYN, NY 11232

**BUSH TERMINAL PIER 7
NEW YORK ECONOMIC DEVELOPMENT CORP.
ONE LIBERTY PLAZA, 14TH FLOOR
NEW YORK, NY 10006**

JACLYN J. FLOR, P.E., P.P., C.M.E.
CONSULTING ENGINEER
Jaclyn J. Flor
LICENSED PROFESSIONAL ENGINEER
STATE OF NY LICENSE NO. G101540
CERTIFICATE OF AUTHORIZATION 0017153
DATE: 11/2/2022

PROJECT NO. WSPG-00020
DRAWING
EX
SHEET NO.
3 OF **11**

BLOCK 715 LOT 1
(1,340,805 SF/30.7806 AC)
#4100 1ST AVENUE
N/F
CITY OF NEW YORK
REEL 483 PAGE 33



- NOTES:**
- CONTRACTOR SHALL VISIT SITE AND EXPEND EFFORT TO BECOME THOROUGHLY KNOWLEDGABLE OF THE NATURE AND COMPOSITION OF REMNANT PIER DEBRIS AND FILL TO BE REMOVED WITHIN THE DEMOLITION LIMITS SHOWN. CONTRACTOR PRICING SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE REMOVAL AND LEGAL DISPOSAL OF ALL DEBRIS AND FILL AT AN APPROVED OFF-SITE DISPOSAL FACILITY.
 - THE CONTRACTOR SHALL LEGALLY REMOVE REMNANT PIER DEBRIS DOWN TO THE LITTORAL ZONE LOWER LIMIT TAKEN AT ELEVATION -8.61 FT (NAVD88), INCLUDING DEBRIS WHICH HAS COLLAPSED OUTSIDE OF THE LIMITS OF THE ORIGINAL PIER OUTLINE AS INDICATED. DEBRIS TO BE REMOVED SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO ALL MANNER OF REMNANT FILL INCLUDING
 CONCRETE: DEBRIS, SLABS, GRADE BEAMS, PEDESTALS, PIERS, SEAWALLS, FOUNDATIONS, DEADMEN, DRAINAGE STRUCTURES, ETC.
 FILL: EARTHEN FILL, ASPHALT, BRICKS, COBBLES, VEGETATION, ETC.
 TIMBER: REMNANT TIMBER CUT-OFF WALLS, SHEETING, WALES, BULKHEAD, PILES, STUBS, BRACES, DECKING, FENDER REMNANTS, ETC.
 STEEL/IRON: TIE-RODS, MOORING DEVICES, TRACK, RAILS, PILES, STUBS, SHEET PILES, FENDER COMPONENTS, UTILITY STRUCTURES, DRAINAGE STRUCTURES, CONDUIT, PIPES, ABANDONED BURIED FUEL OIL TANKS, FENCES, AND OTHER MISCELLANEOUS DEBRIS, AS THE CASE MAY BE.
 - OBSTRUCTIONS AND INTERFERENCES IN PERFORMANCE OF THE WORK SHALL BE REMOVED AND LEGALLY DISPOSED. BURIED REMNANT DEBRIS SHALL NOT BE DEEMED AS AN OBSTRUCTION. NO CONSIDERATION WILL BE GIVEN FOR ADDITIONAL COMPENSATION ON THIS ACCOUNT.
- THE WORK ALSO INCLUDES INSTALLATION OF AN ARMOR STONE REVETMENT AT THE INSHORE END OF PIER 7 IN ORDER TO STABILIZE THE SHORELINE.

LEGEND

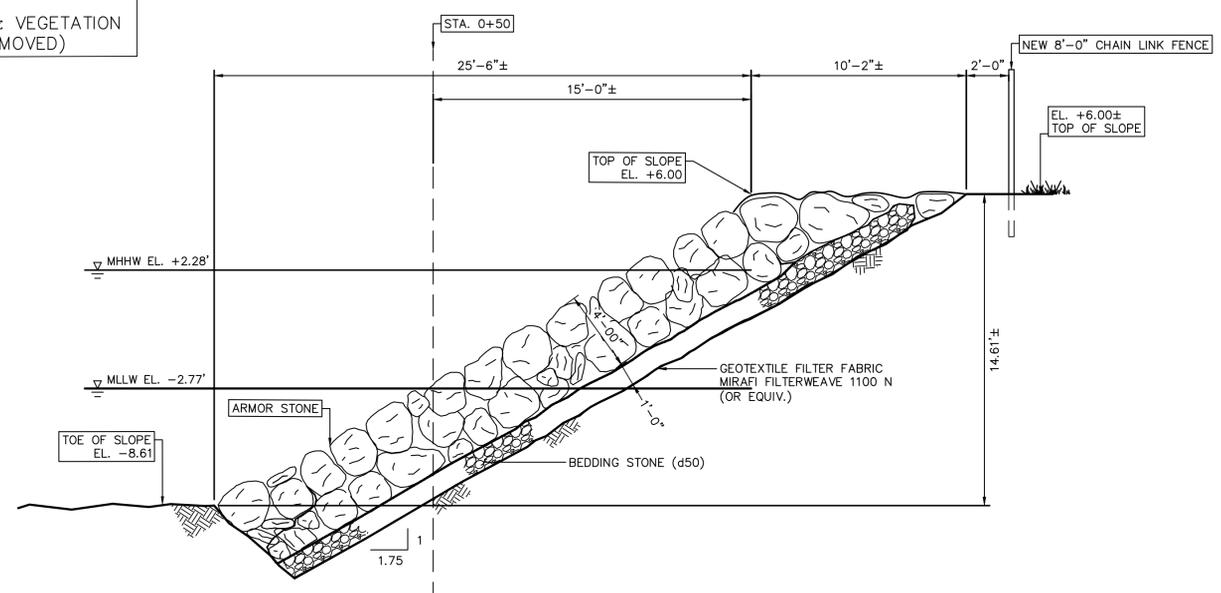
- CONCR. & MISC. PIER DEBRIS AND FILL BELOW MHHW EL. +2.28 (4.02 ACRES TO BE REMOVED)
- CONCR. & MISC. PIER DEBRIS AND FILL ABOVE MHHW EL. +2.28 (0.79 ACRES TO BE REMOVED)
- CONCR. & MISC. PIER DEBRIS MIXED WITH FILL & VEGETATION ABOVE MHHW EL. +2.28 (0.35 ACRES TO BE REMOVED)

REFERENCE DATUM

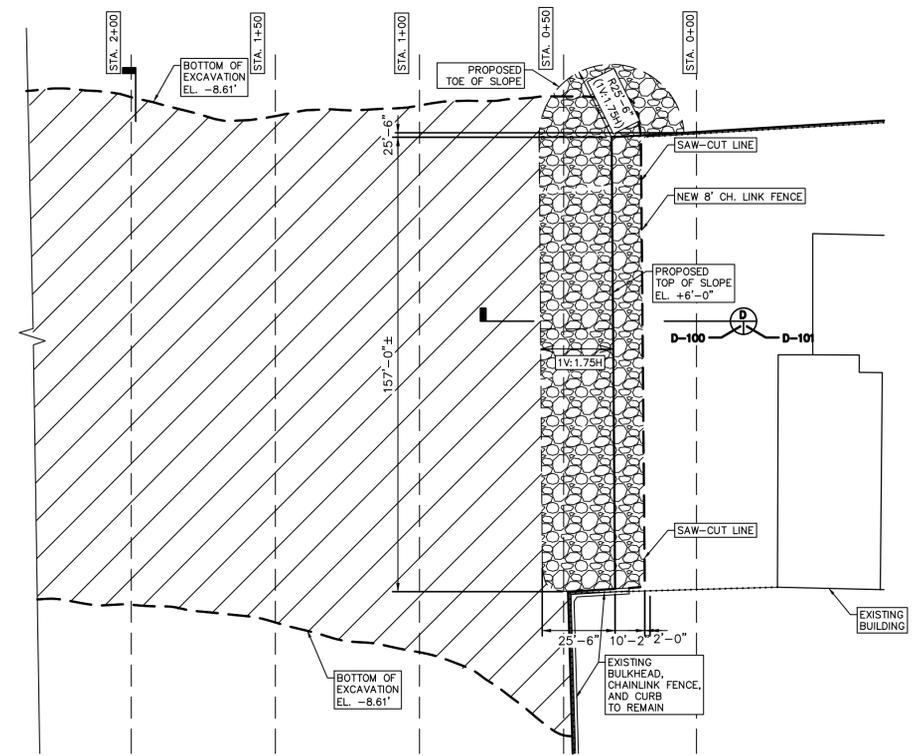
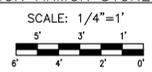
LEVEL	NAVD88
MHHW	+2.28
MHW	+1.96
MLW	-2.57
MLLW	-2.77
LOWER LITTORAL LIMIT	-8.61

STONE GRADATION REQUIREMENTS

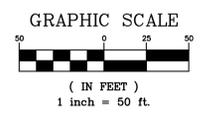
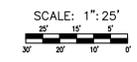
ARMOR & TOE STONE			BEDDING STONE	
PERCENT PASSING BY WEIGHT	ARMOR STONE SIZE { LBS }	TOE STONE SIZE { LBS }	PERCENT PASSING BY SIZE	EQUIV. STONE DIA. (IN.)
W15 (MIN.)	667 lbs	625 lbs	d15 (MIN.)	3"
W15 (MAX.)	1250 lbs	-	d15 (MAX.)	5"
W50 (MIN.)	1667 lbs	1250 lbs	d50	5"
W50 (MAX.)	2500 lbs	1875 lbs		
W85 (MIN.)			d85 (MIN.)	5"
W85 (MAX.)			d85 (MAX.)	6"
W100 (MIN.)	3334 lbs		d50	10"
W100 (MAX.)	3900 lbs			



TYPICAL SECTION ARMOR STONE REVETMENT



ARMOR STONE REVETMENT PLAN VIEW



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DESIGNED BY: J.J.F.
DRAWN BY: J.W.P.
SHEET CHK'D BY: J.J.F.
CROSS CHK'D BY: S.T.A.
APPROVED BY: J.J.F.
DATE: NOVEMBER 2, 2022



ENGENUITY INFRASTRUCTURE
GALLERIA: 2 BRIDGE AVE., SUITE 323
RED BANK, NJ 07701
732.741.3176
ENGENUITYNJ.COM

DEMOLITION AND REVETMENT PLAN
BLOCK 715 LOT 1
1ST AVENUE & 43RD STREET
BROOKLYN, NY 11232

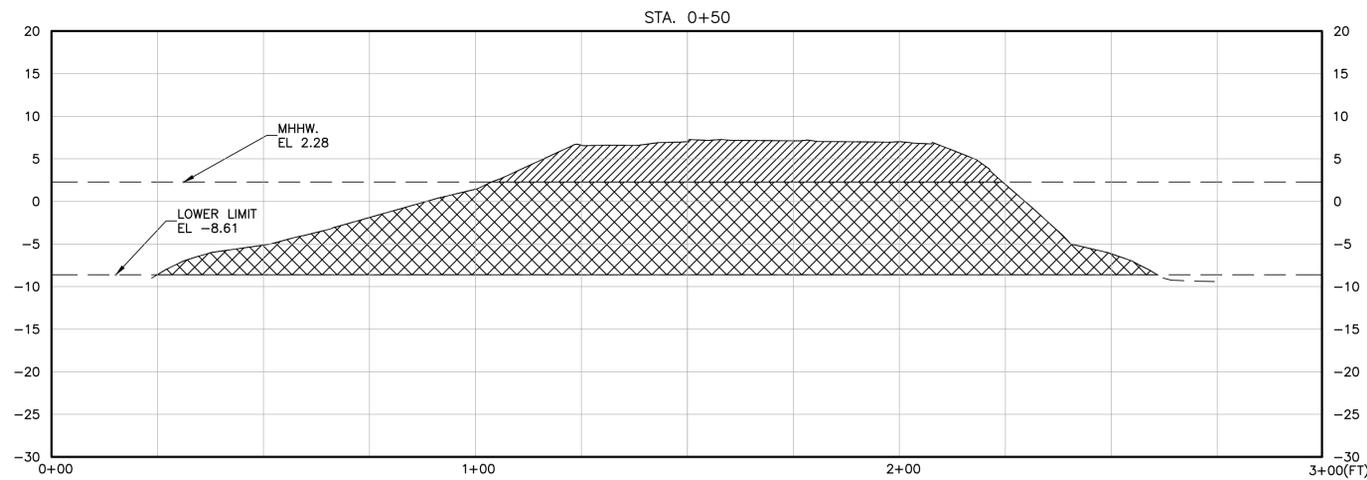
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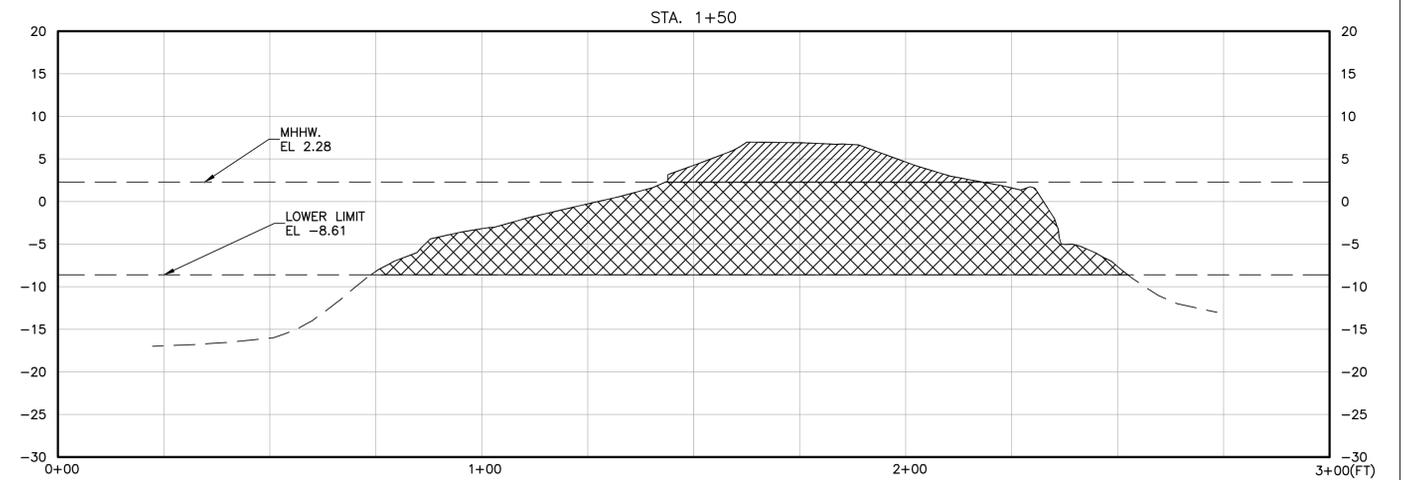
11/2/2022
DATE

PROJECT NO. WSPG-00020
DRAWING
DEMO
SHEET NO.
4 OF 11

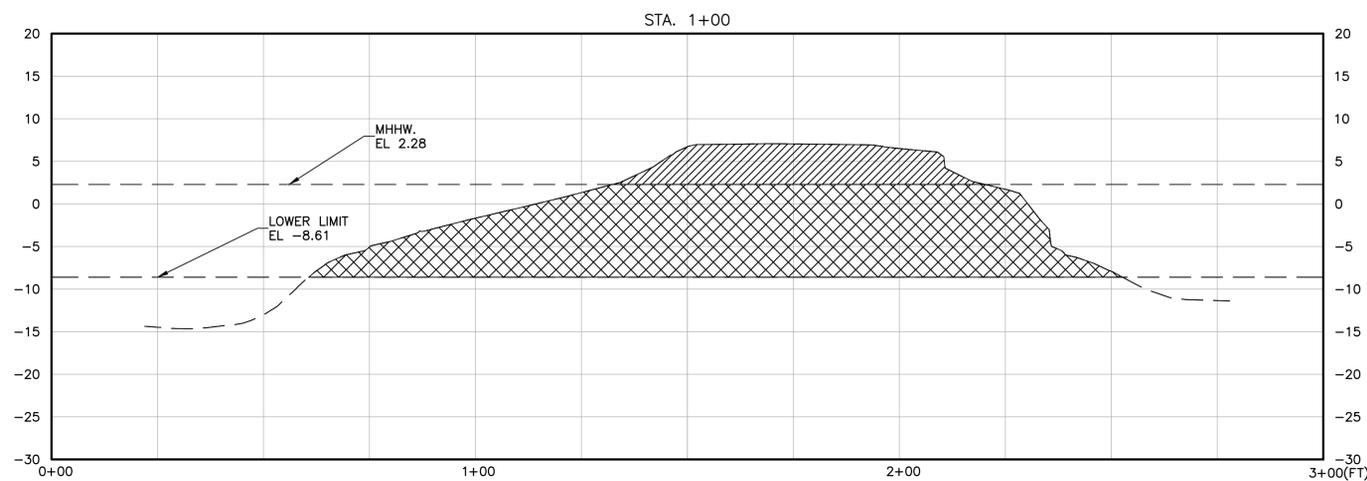
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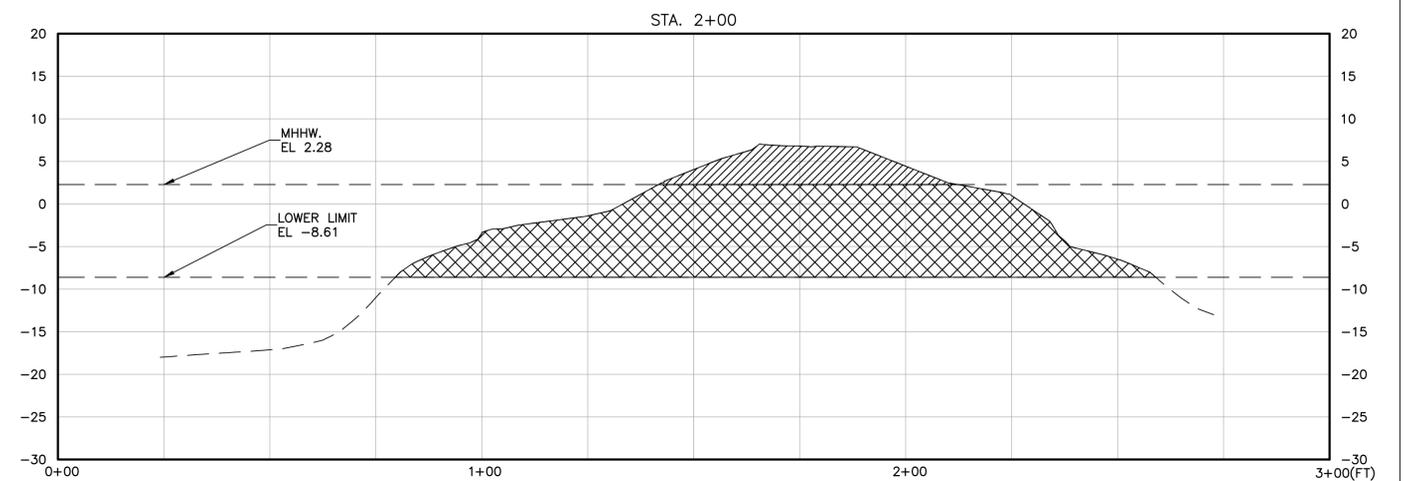
STA. 0+50	
AREA (SF)	VOLUME (CY)
2391.58	2214.42



STA. 1+50	
AREA (SF)	VOLUME (CY)
1682.83	3315.29



STA. 1+00	
AREA (SF)	VOLUME (CY)
1897.68	6185.96

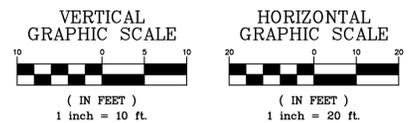


STA. 2+00	
AREA (SF)	VOLUME (CY)
1611.38	3050.20

REFERENCE DATUM	
LEVEL	NAVD88
MHHW	+2.28
MHW	+1.96
MLW	-2.57
MLLW	-2.77
LOWER LITTORAL LIMIT	-8.61

LEGEND

- AREA 1: PIER REMAINS ABOVE MHHW TO BE REMOVED
- AREA 2: PIER REMAINS BELOW MHHW TO BE REMOVED



REV. NO.	DATE	DRWN	CHKD	REMARKS
2	12/12/22	MPK	STA	REVISED NYEDC ADDRESS
1	11/2/22	MPK	STA	REVISED TIDAL DATUMS

DESIGNED BY: JJF
 DRAWN BY: JWP
 SHEET CHK'D BY: JJF
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 APPROVED BY: JJF
 DATE: NOVEMBER 2, 2022



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 RED BANK, NJ 07701
 732.741.3176
 ENGENUITYNJ.COM

CROSS SECTIONS - 1
 BLOCK 715 LOT 1
 1ST AVENUE & 43RD STREET
 BROOKLYN, NY 11232

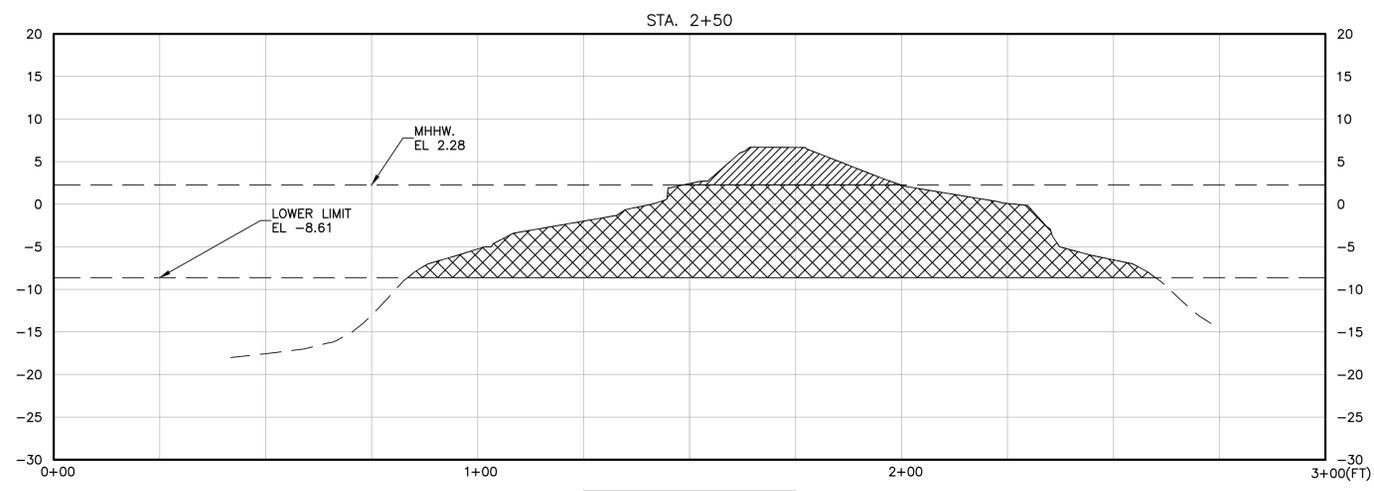
BUSH TERMINAL PIER 7
NEW YORK ECONOMIC DEVELOPMENT CORP.
 ONE LIBERTY PLAZA, 14TH FLOOR
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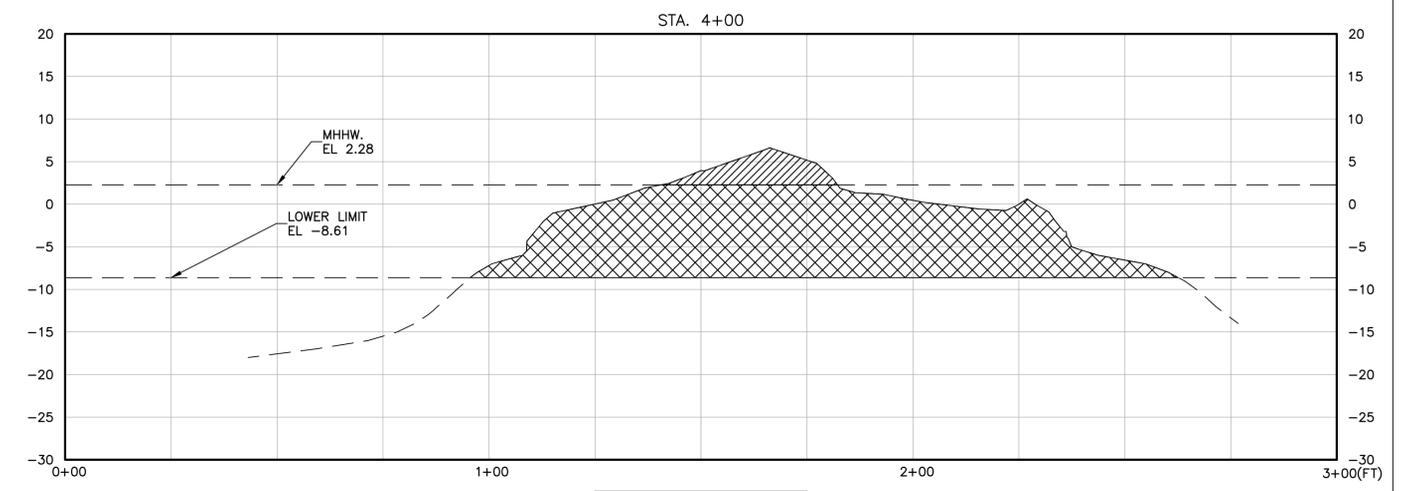
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 DATE: 12/13/2022

PROJECT NO. WSPG-00020
 DRAWING
CS-1
 SHEET NO.
5 OF **11**

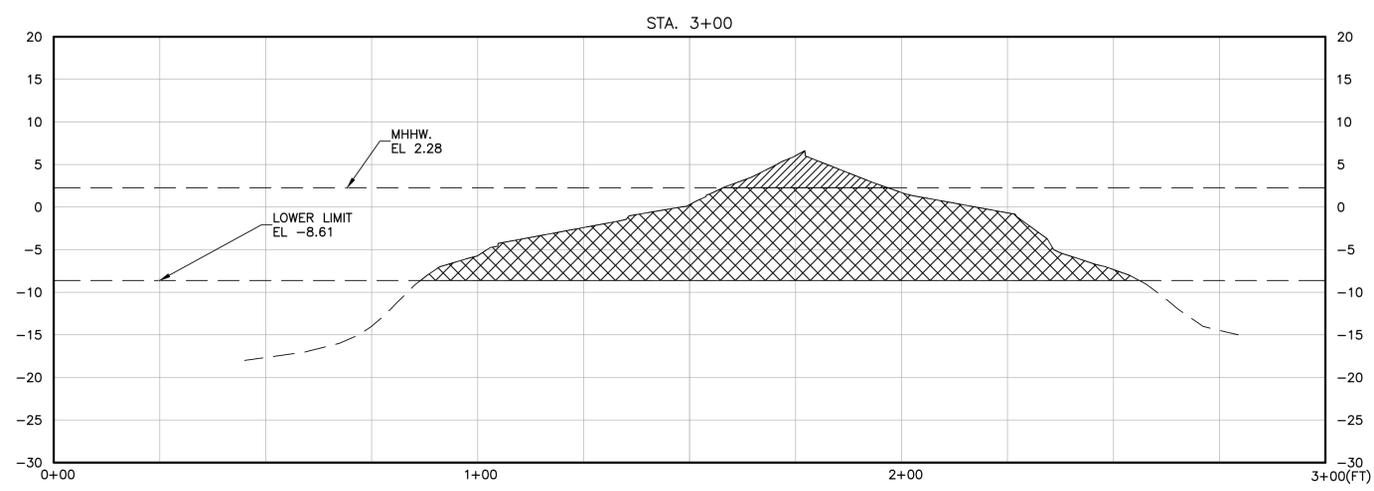
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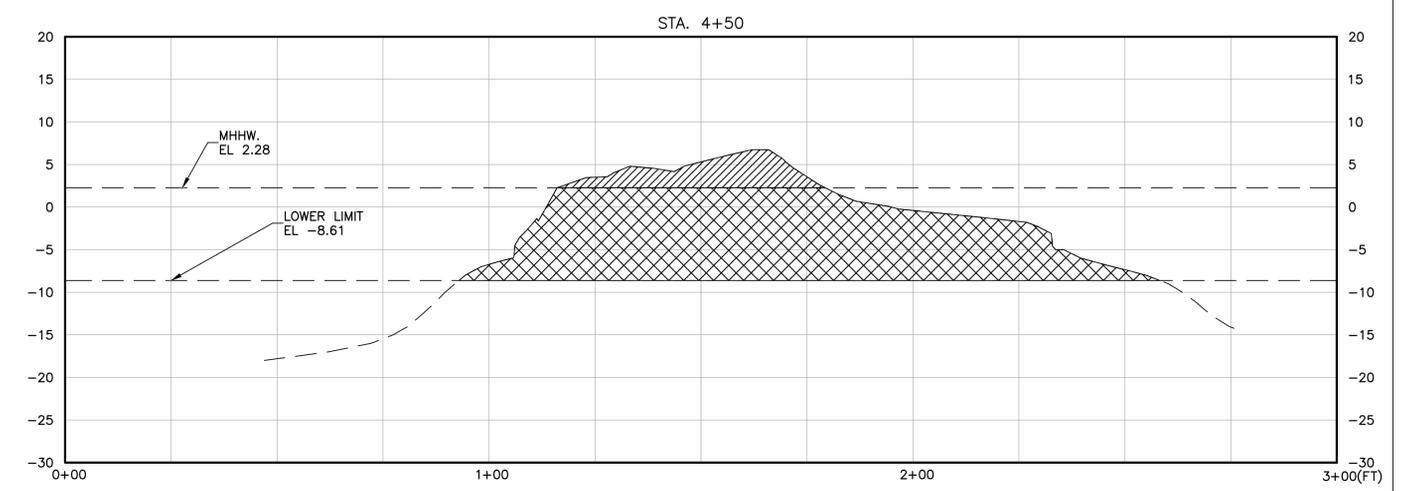
STA. 2+50	
AREA (SF)	VOLUME (CY)
1433.52	2819.36



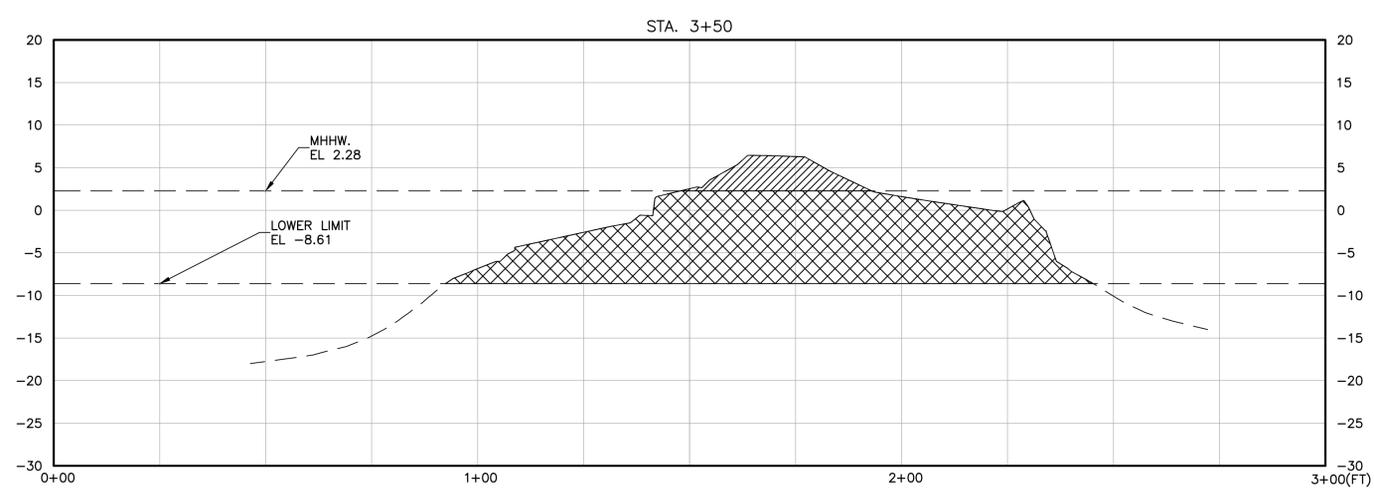
STA. 4+00	
AREA (SF)	VOLUME (CY)
1369.69	2475.13



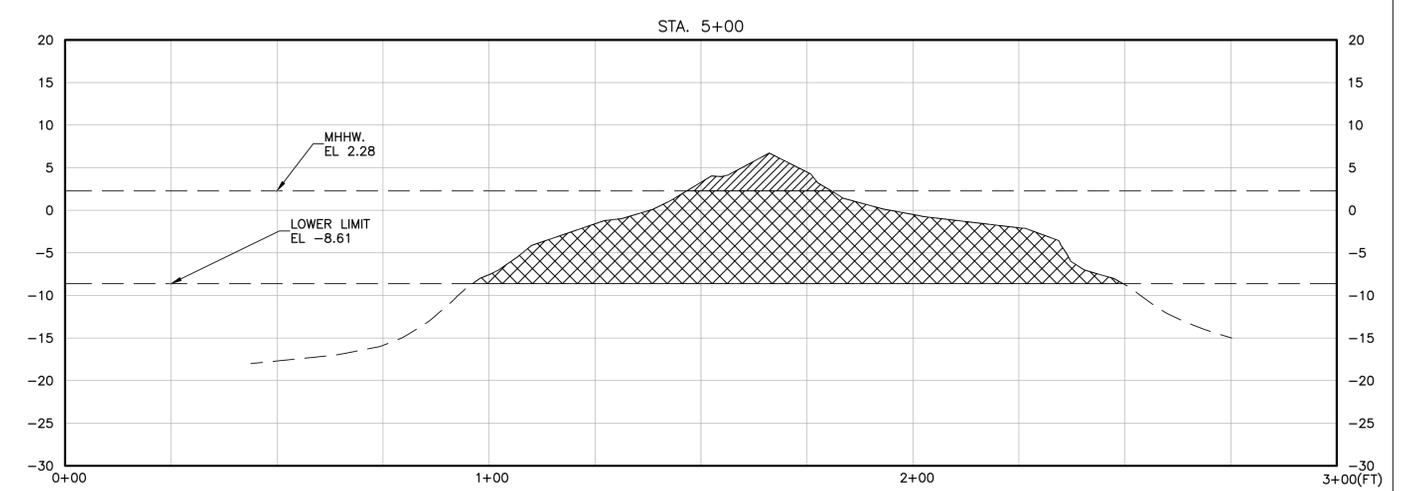
STA. 3+00	
AREA (SF)	VOLUME (CY)
1280.82	2513.28



STA. 4+50	
AREA (SF)	VOLUME (CY)
1412.76	2576.34

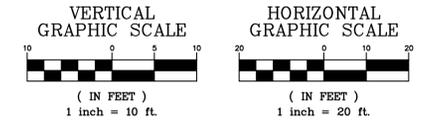


STA. 3+50	
AREA (SF)	VOLUME (CY)
1303.45	2392.84



STA. 5+00	
AREA (SF)	VOLUME (CY)
1189.44	2409.44

REFERENCE DATUM	
LEVEL	NAVD88
MHHW	+2.28
MHW	+1.96
MLW	-2.57
MLLW	-2.77
LOWER LITTORAL LIMIT	-8.61



LEGEND
 [Hatched Area] AREA 1: PIER REMAINS ABOVE MHHW TO BE REMOVED
 [Cross-hatched Area] AREA 2: PIER REMAINS BELOW MHHW TO BE REMOVED

REV. NO.	DATE	DRWN	CHKD	REMARKS
2	12/12/22	MPK	STA	REVISED NYEDC ADDRESS
1	11/2/22	MPK	STA	REVISED TIDAL DATUMS

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 732.741.3176
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CROSS SECTIONS - 2
 BLOCK 715 LOT 1
 1ST AVENUE & 43RD STREET
 BROOKLYN, NY 11232

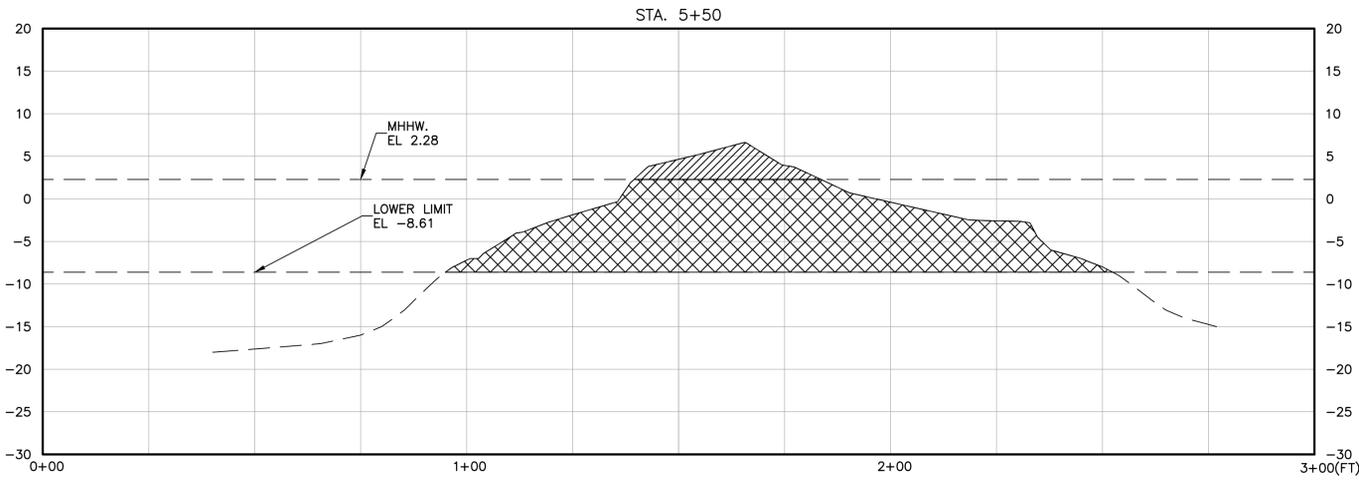
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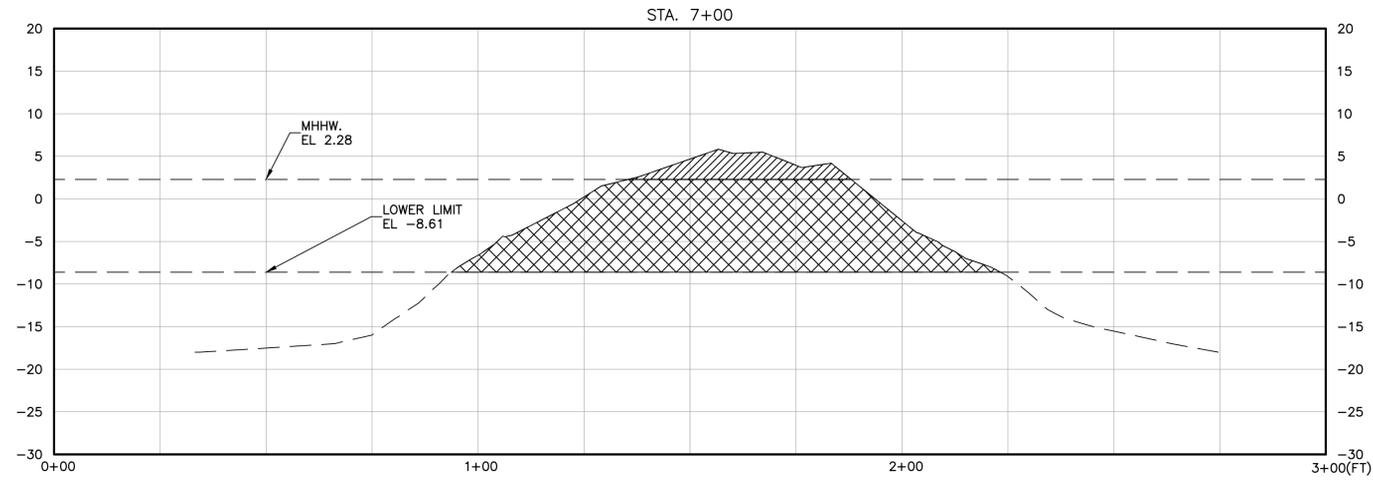
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PROJECT NO. WSPG-00020
 DRAWING
CS-2
 SHEET NO.
6 OF **11**

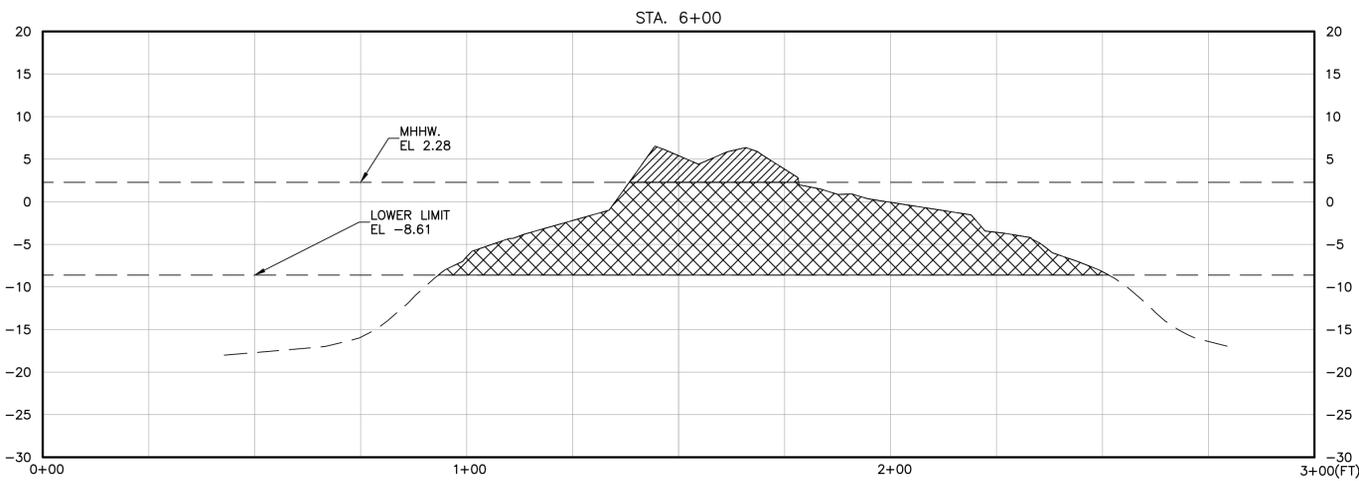
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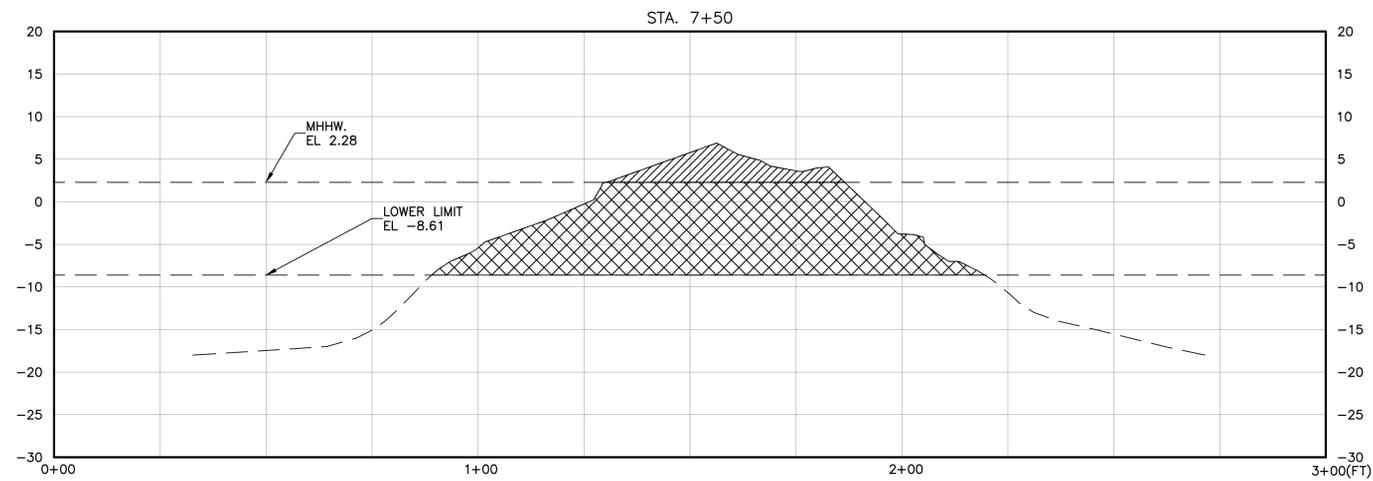
STA. 5+50	
AREA (SF)	VOLUME (CY)
1227.19	2237.62



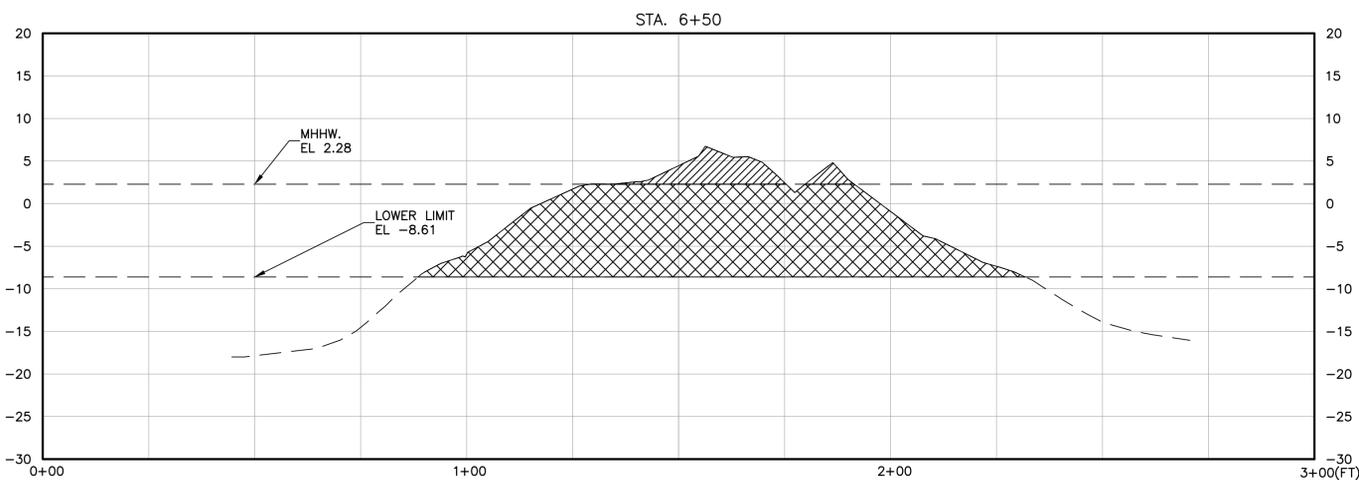
STA. 7+00	
AREA (SF)	VOLUME (CY)
1094.45	2116.80



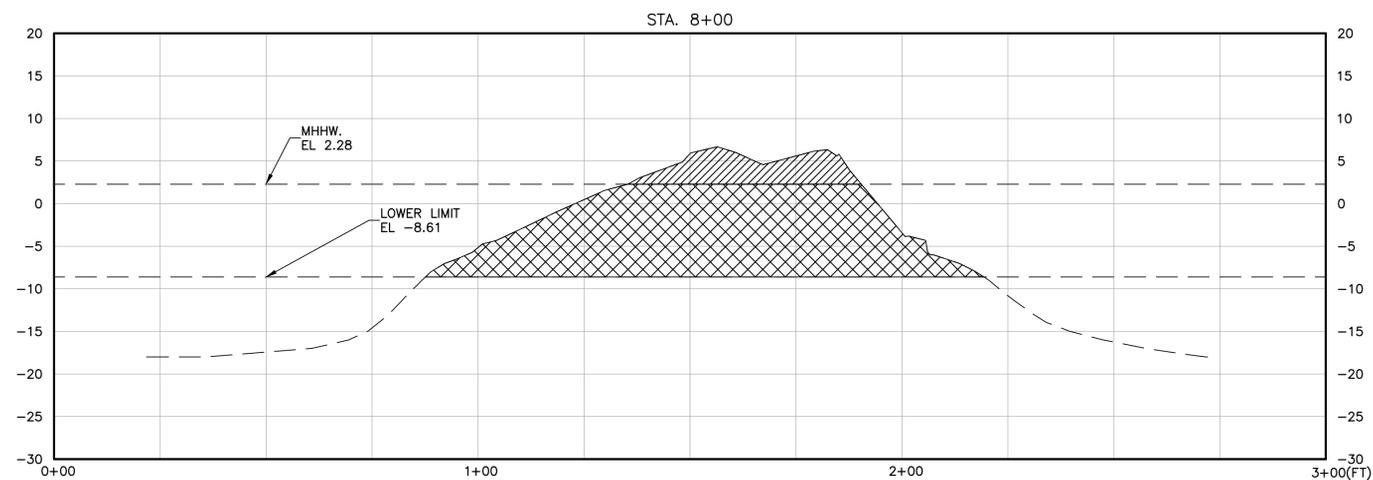
STA. 6+00	
AREA (SF)	VOLUME (CY)
1237.15	2281.80



STA. 7+50	
AREA (SF)	VOLUME (CY)
1104.71	2036.26

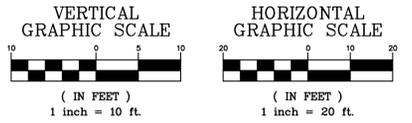


STA. 6+50	
AREA (SF)	VOLUME (CY)
1191.36	2248.62



STA. 8+00	
AREA (SF)	VOLUME (CY)
1163.62	2100.31

REFERENCE DATUM	
LEVEL	NAVD88
MHHW	+2.28
MHW	+1.96
MLW	-2.57
MLLW	-2.77
LOWER LITTORAL LIMIT	-8.61



LEGEND
 [Hatched Pattern] AREA 1: PIER REMAINS ABOVE MHHW TO BE REMOVED
 [Cross-hatched Pattern] AREA 2: PIER REMAINS BELOW MHHW TO BE REMOVED

REV. NO.	DATE	DRWN	CHKD	REMARKS
2	12/12/22	MPK	STA	REVISED NYEDC ADDRESS
1	11/2/22	MPK	STA	REVISED TIDAL DATUMS

DESIGNED BY: J.J.F.
 DRAWN BY: J.W.P.
 SHEET CHK'D BY: J.J.F.
 CROSS CHK'D BY: STA
 APPROVED BY: J.J.F.
 DATE: NOVEMBER 2, 2022

ENGENUITY INFRASTRUCTURE
 GALLERIA: 2 BRIDGE AVE., SUITE 323
 RED BANK, NJ 07701
 732.741.3176
 ENGENUITYNJ.COM

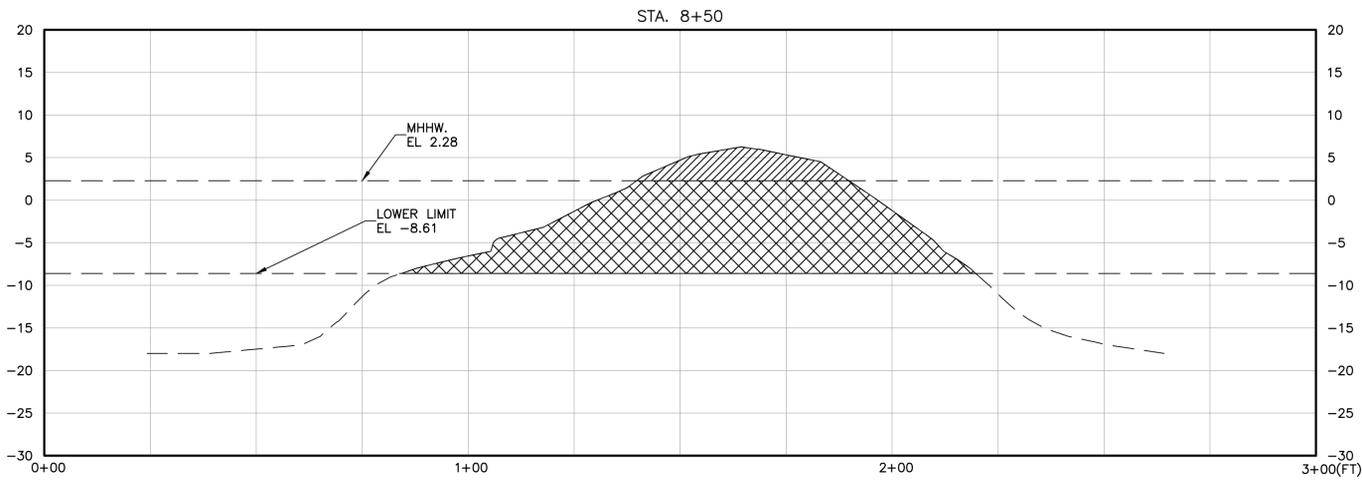
CROSS SECTIONS - 3
 BLOCK 715 LOT 1
 1ST AVENUE & 43RD STREET
 BROOKLYN, NY 11232

BUSH TERMINAL PIER 7
NEW YORK ECONOMIC DEVELOPMENT CORP.
 ONE LIBERTY PLAZA, 14TH FLOOR
 NEW YORK, NY 10006

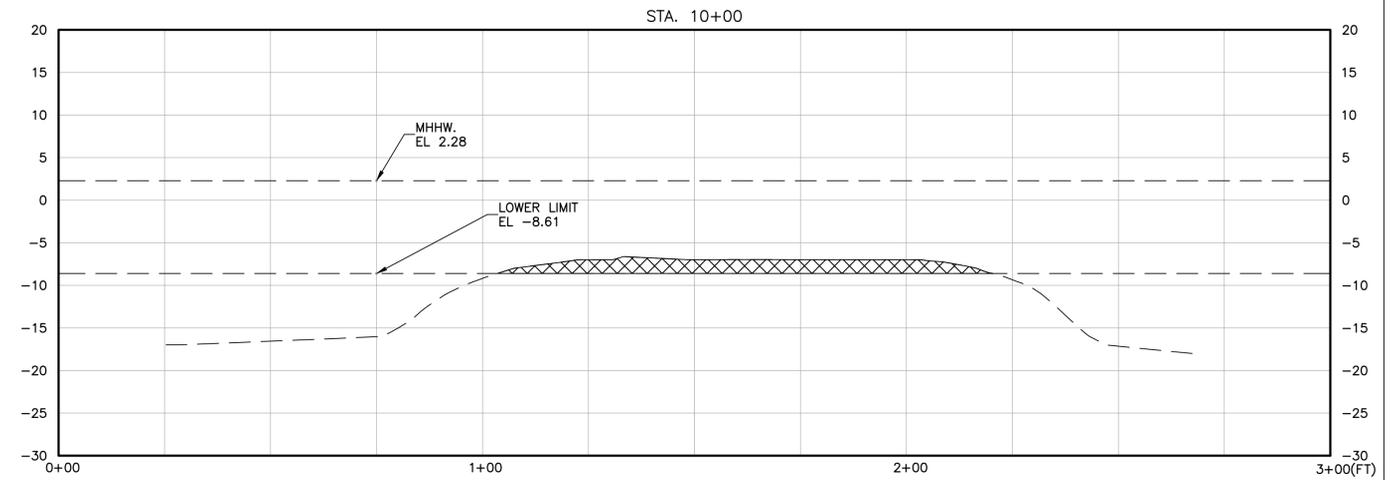
JACLYN J. FLOR, P.E., P.P., C.M.E.
 CONSULTING ENGINEER
 [Signature]
 LICENSED PROFESSIONAL ENGINEER
 STATE OF NY LICENSE NO. G101540
 CERTIFICATE OF AUTHORIZATION 0017153
 DATE: 11/2/2022

PROJECT NO. WSPG-00020
DRAWING
CS-3
SHEET NO.
7 OF 11

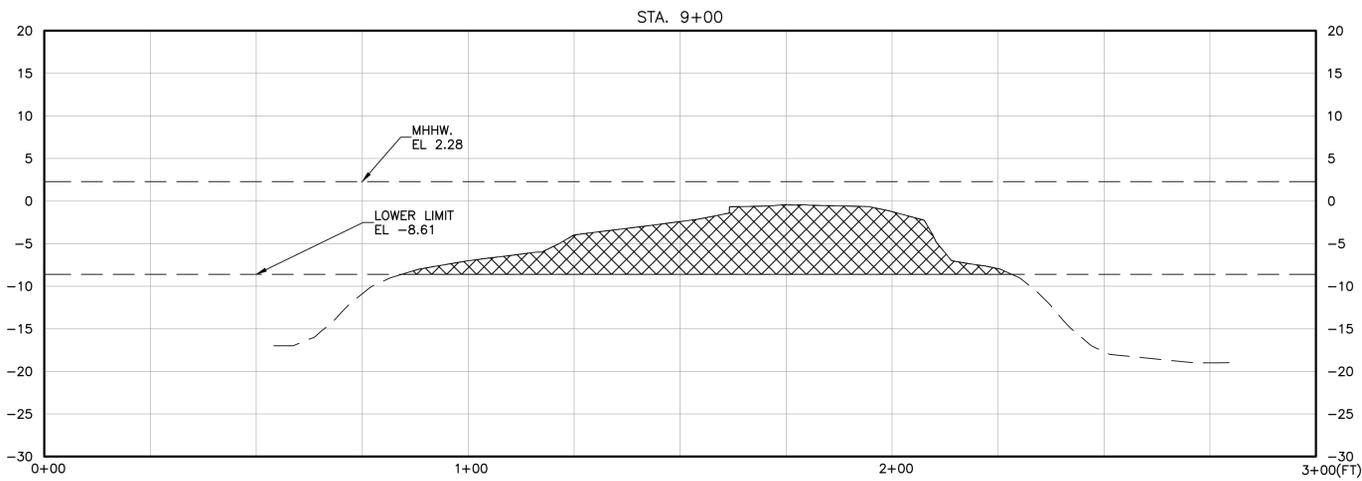
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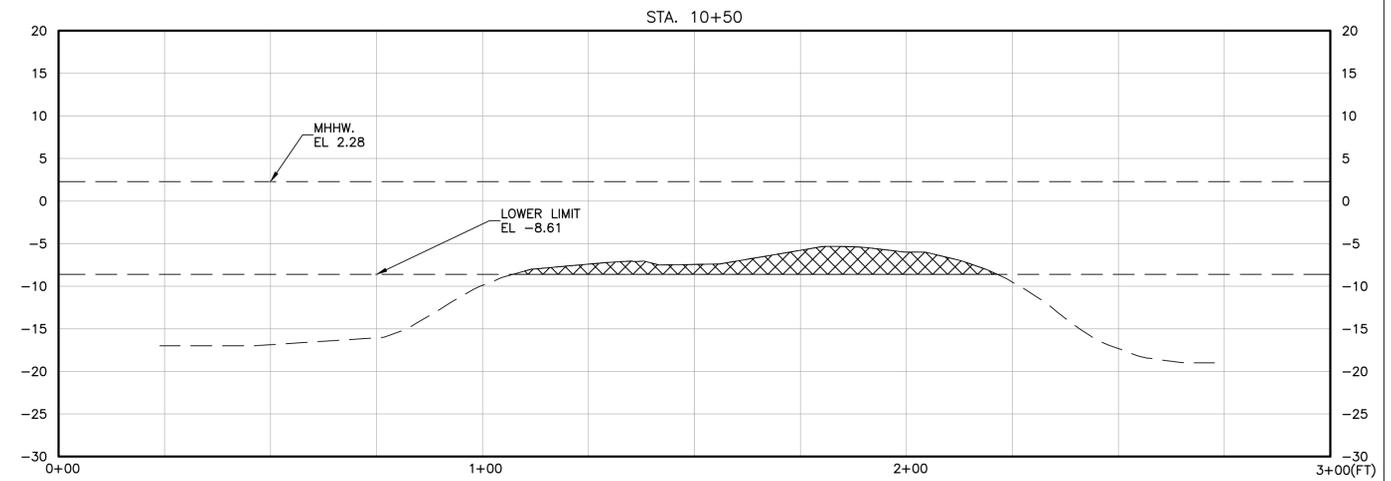
STA. 8+50	
AREA (SF)	VOLUME (CY)
1106.46	2101.93



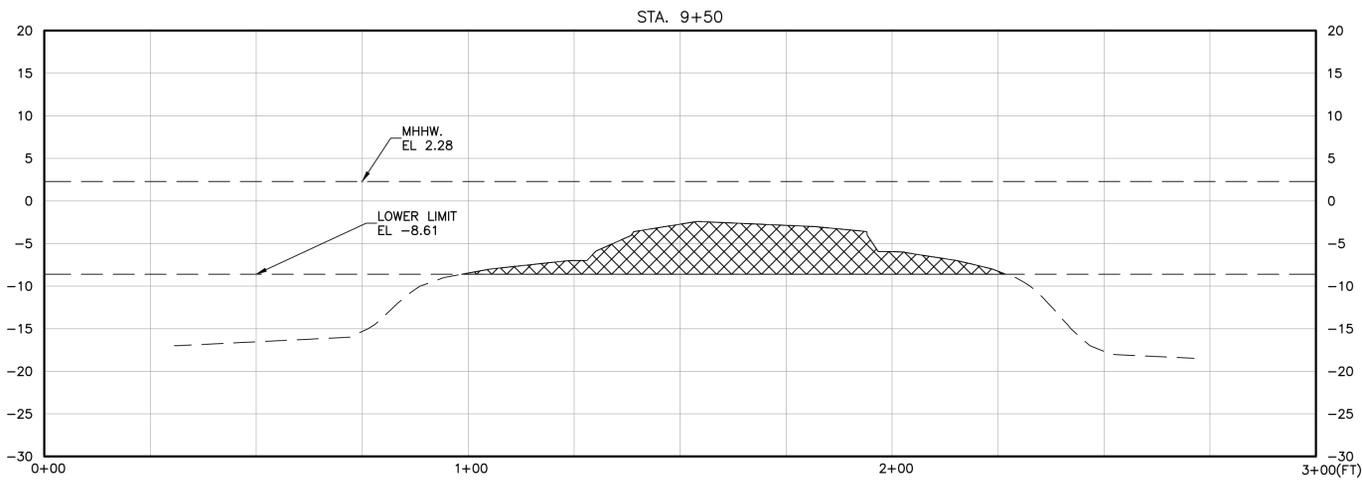
STA. 10+00	
AREA (SF)	VOLUME (CY)
168.44	564.85



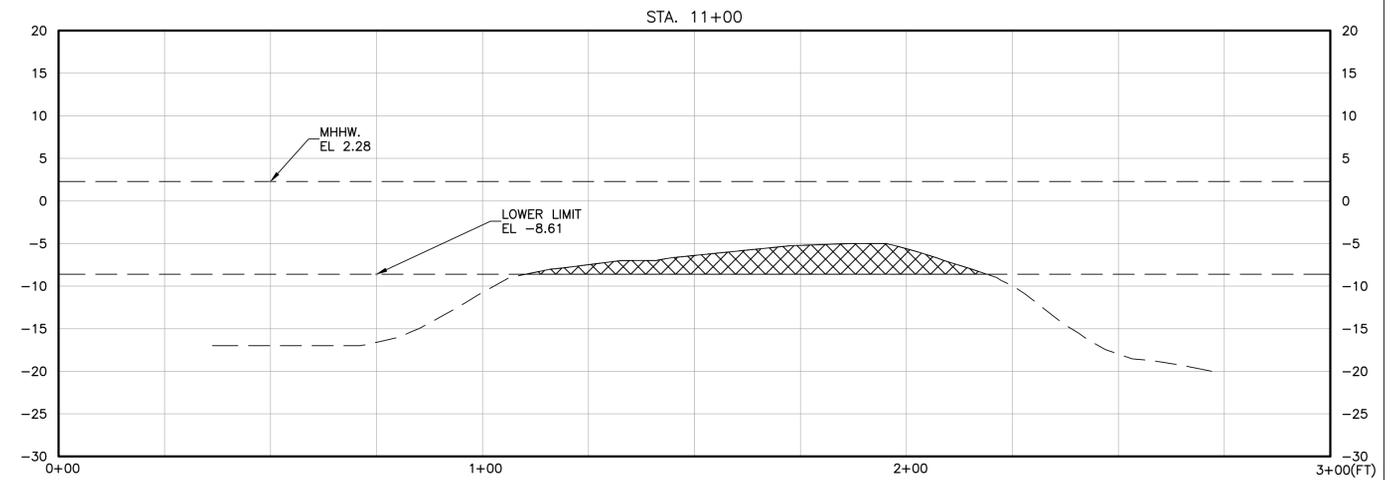
STA. 9+00	
AREA (SF)	VOLUME (CY)
688.03	1661.57



STA. 10+50	
AREA (SF)	VOLUME (CY)
205.19	345.95



STA. 9+50	
AREA (SF)	VOLUME (CY)
441.61	1045.97

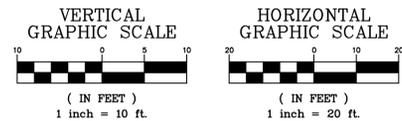


STA. 11+00	
AREA (SF)	VOLUME (CY)
238.08	410.43

REFERENCE DATUM	
LEVEL	NAVD88
MHHW	+2.28
MHW	+1.96
MLW	-2.57
MLLW	-2.77
LOWER LITTORAL LIMIT	-8.61

LEGEND

- AREA 1: PIER REMAINS ABOVE MHHW TO BE REMOVED
- AREA 2: PIER REMAINS BELOW MHHW TO BE REMOVED



REV. NO.	DATE	DRWN	CHKD	REMARKS
2	12/12/22	MPK	STA	REVISED NYEDC ADDRESS
1	11/2/22	MPK	STA	REVISED TIDAL DATUMS

DESIGNED BY: JJF
 DRAWN BY: JWP
 SHEET CHK'D BY: JJF
 CROSS CHK'D BY: STA
 APPROVED BY: JJF
 DATE: NOVEMBER 2, 2022



ENGENUITY INFRASTRUCTURE
 GALLERIA: 2 BRIDGE AVE., SUITE 323
 RED BANK, NJ 07701
 732.741.3176
 ENGENUITYNJ.COM

CROSS SECTIONS - 4
 BLOCK 715 LOT 1
 1ST AVENUE & 43RD STREET
 BROOKLYN, NY 11232

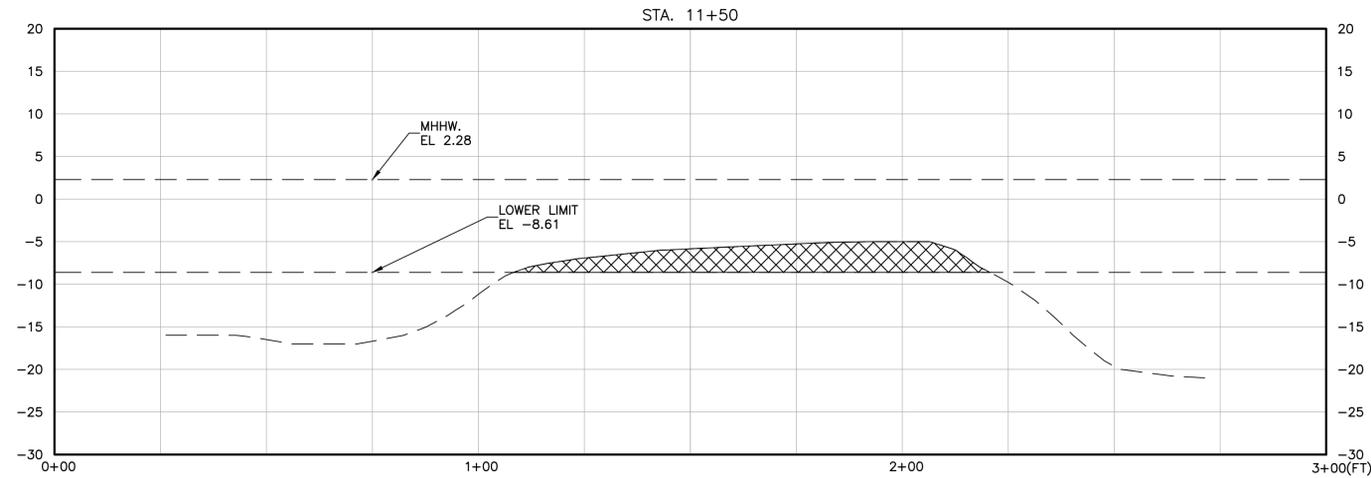
BUSH TERMINAL PIER 7
NEW YORK ECONOMIC DEVELOPMENT CORP.
 ONE LIBERTY PLAZA, 14TH FLOOR
 NEW YORK, NY 10006

JACLYN J. FLOR, P.E., P.P., C.M.E.
 CONSULTING ENGINEER

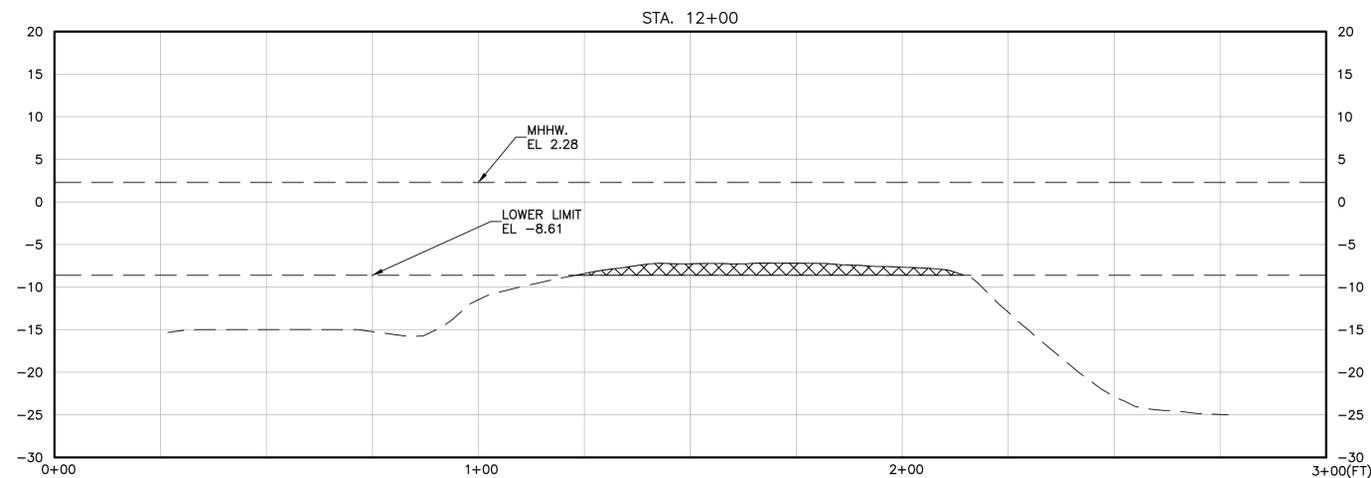
 LICENSED PROFESSIONAL ENGINEER
 STATE OF NY LICENSE NO. G101540
 CERTIFICATE OF AUTHORIZATION 0017153
 DATE: 11/2/2022

PROJECT NO. WSPG-00020
 DRAWING
CS-4
 SHEET NO.
8 OF **11**

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STA. 11+50	
AREA (SF)	VOLUME (CY)
291.28	490.14



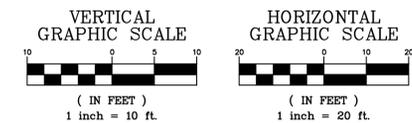
STA. 12+00	
AREA (SF)	VOLUME (CY)
100.40	362.66

Total Volume Table			
Station	Cut Area	Cut Vol	Cum Cut Vol
0+00.00	0.00	0.00	0.00
0+50.00	2391.58	2214.42	2214.42
1+00.00	1897.68	3971.53	6185.96
1+50.00	1682.83	3315.29	9501.24
2+00.00	1611.38	3050.20	12551.44
2+50.00	1433.52	2819.36	15370.79
3+00.00	1280.82	2513.28	17884.08
3+50.00	1303.45	2392.84	20276.92
4+00.00	1369.69	2475.13	22752.05
4+50.00	1412.76	2576.34	25328.39
5+00.00	1189.44	2409.44	27737.83
5+50.00	1227.19	2237.62	29975.45
6+00.00	1237.15	2281.80	32257.24
6+50.00	1191.36	2248.62	34505.87
7+00.00	1094.45	2116.49	36622.36
7+50.00	1104.71	2036.26	38658.61
8+00.00	1163.62	2100.31	40758.92
8+50.00	1106.46	2101.93	42860.86
9+00.00	688.03	1661.57	44522.43
9+50.00	441.61	1045.97	45568.40
10+00.00	168.44	564.86	46133.26
10+50.00	205.19	345.95	46479.21
11+00.00	238.08	410.43	46889.64
11+50.00	291.28	490.14	47379.78
12+00.00	100.40	362.66	47742.44
12+50.00	0.00	92.96	47835.40

LEGEND

- AREA 1: PIER REMAINS ABOVE MHHW TO BE REMOVED
- AREA 2: PIER REMAINS BELOW MHHW TO BE REMOVED

REFERENCE DATUM	
LEVEL	NAVD88
MHHW	+2.28
MHW	+1.96
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MLLW	-2.77
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DESIGNED BY: JJF
 DRAWN BY: JWP
 SHEET CHK'D BY: JJF
 CROSS CHK'D BY: STA
 APPROVED BY: JJF
 DATE: NOVEMBER 2, 2022

ENGENUITY INFRASTRUCTURE
 GALLERIA: 2 BRIDGE AVE., SUITE 323
 RED BANK, NJ 07701
 732.741.3176
 ENGENUITYNJ.COM

CROSS SECTIONS - 5
 BLOCK 715 LOT 1
 1ST AVENUE & 43RD STREET
 BROOKLYN, NY 11232

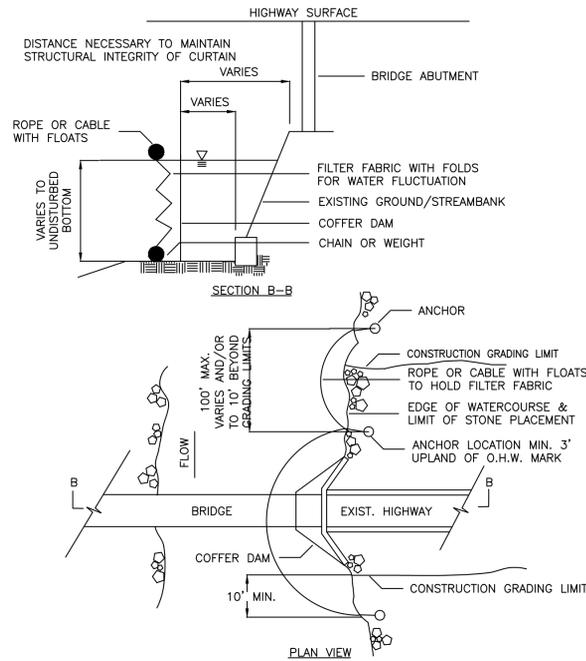
**BUSH TERMINAL PIER 7
 NEW YORK ECONOMIC DEVELOPMENT CORP.
 ONE LIBERTY PLAZA, 14TH FLOOR
 NEW YORK, NY 10006**

JACLYN J. FLOR, P.E., P.P., C.M.E.
 CONSULTING ENGINEER

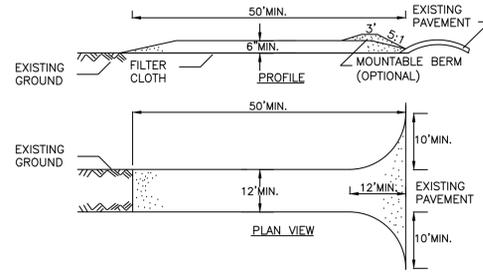
 LICENSED PROFESSIONAL ENGINEER
 STATE OF NY LICENSE NO. G101540
 CERTIFICATE OF AUTHORIZATION 0017153
 DATE: 11/2/2022

PROJECT NO. WSPG-00020
 DRAWING
CS-5
 SHEET NO.
9 OF **11**

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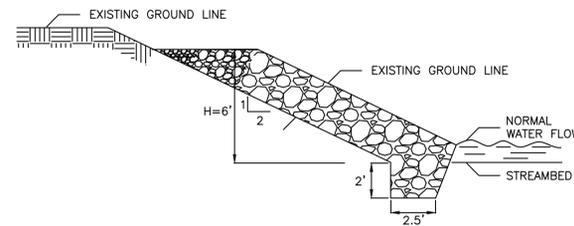
TURBIDITY CURTAIN
DETAIL **(A)**
NTS SESC



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

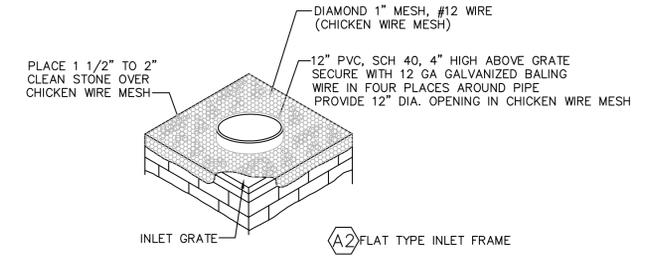
STABILIZED CONSTRUCTION ENTRANCE
DETAIL **(B)**
NTS SESC



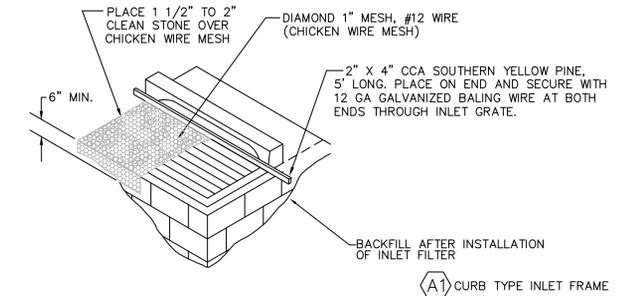
CONSTRUCTION SPECIFICATIONS

1. SLOPE SHALL BE GRADED TO 2:1 OR FLATTER PRIOR TO PLACING FILTER, FILTER FABRIC, OR RIPRAP.
2. RIPRAP SHALL BE PLACED TO MAINTAIN A UNIFORM GRADATION. LARGER STONE SHALL BE PLACED AT THE TOE.
3. ENDS OF THE RIPRAP SHALL BE KEYED INTO A STABLE BANK. WHEN TYING INTO OTHER STRUCTURES, LARGER RIPRAP CAN BE LAID IN STEPS OR STACKED AS NEEDED TO FIT. STONES LARGER THAN THOSE DESIGNED FOR FLOW SHALL BE USED FOR THIS PURPOSE.
4. REMAINING DISTURBED AREAS SHALL BE GRADED AND PERMANENTLY SEEDED AND MULCHED.

RIPRAP CHANNEL PROTECTION AND STABILIZATION
DETAIL **(D)**
NTS SESC



- GENERAL NOTES:**
1. CONTRACTOR TO CLEAN INLET FILTER AFTER EVERY STORM.
 2. FILTER FABRIC, WOOD PIECE OR PVC PIPE TO BE REMOVED AFTER PAVING OR FINAL GRADING AND ESTABLISHMENT OF VEGETATION.



INLET FILTER PROTECTION
DETAIL **(C)**
NTS SESC

SOIL EROSION LEGEND

- (A1) INLET FILTER, CURB TYPE
- (A2) INLET FILTER, FLAT GRATE TYPE
- (E2) STABILIZED CONSTRUCTION ACCESS
- - - - - LIMIT OF DISTURBANCE

REV. NO.	DATE	DRWN	CHKD	REMARKS
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1	11/2/22	MPK	STA	REVISED TIDAL DATUMS

DESIGNED BY: JJF
 DRAWN BY: JWP
 SHEET CHK'D BY: JJF
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 DATE: NOVEMBER 2, 2022

ENGENUITY INFRASTRUCTURE
 GALLERIA: 2 BRIDGE AVE., SUITE 323
 RED BANK, NJ 07701
 732.741.3176
 ENGENUITYNJ.COM

SESC DETAILS
 BLOCK 715 LOT 1
 1ST AVENUE & 43RD STREET
 BROOKLYN, NY 11232

BUSH TERMINAL PIER 7
NEW YORK ECONOMIC DEVELOPMENT CORP.
 ONE LIBERTY PLAZA, 14TH FLOOR
 NEW YORK, NY 10006

JACLYN J. FLOR, P.E., P.P., C.M.E.
 CONSULTING ENGINEER

 LICENSED PROFESSIONAL ENGINEER
 STATE OF NY LICENSE NO. G101540
 CERTIFICATE OF AUTHORIZATION 0017153

PROJECT NO. WSPG-00020
 DRAWING
SESC-1
 SHEET NO.
10 OF **11**

STANDARD FOR TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

DEFINITION

ESTABLISHMENT OF TEMPORARY VEGETATIVE COVER ON SOILS EXPOSED FOR PERIODS OF TWO TO 6 MONTHS WHICH ARE NOT BEING GRADED, NOT UNDER ACTIVE CONSTRUCTION OR NOT SCHEDULED FOR PERMANENT SEEDING WITHIN 60 DAYS.

PURPOSE

TO TEMPORARILY STABILIZE THE SOIL AND REDUCE DAMAGE FROM WIND AND WATER EROSION UNTIL PERMANENT STABILIZATION IS ACCOMPLISHED.

WATER QUALITY ENHANCEMENT

PROVIDES TEMPORARY PROTECTION AGAINST THE IMPACTS OF WIND AND RAIN, SLOWS THE OVERLAND MOVEMENT OF STORMWATER RUNOFF, INCREASES INFILTRATION AND RETAINS SOIL AND NUTRIENTS ON SITE, PROTECTING STREAMS OR OTHER STORMWATER CONVEYANCES.

WHERE APPLICABLE

ON EXPOSED SOILS THAT HAVE THE POTENTIAL FOR CAUSING OFF-SITE ENVIRONMENTAL DAMAGE.

METHODS AND MATERIALS

I. SITE PREPARATION

A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, P. 19-1.

B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.

C. IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).

II. SEEDBED PREPARATION

A. APPLY GROUND LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS THOSE OFFERED BY RUTGERS CO-OPERATIVE EXTENSION. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS CO-OPERATIVE EXTENSION OFFICES. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE. APPLY LIMESTONE AT THE RATE OF 2 TONS/ACRE UNLESS SOIL TEST INDICATES OTHERWISE. CALCIUM CARBONATE IS THE EQUIVALENT AND STANDARD FOR MEASURING THE ABILITY OF LIMING MATERIALS TO NEUTRALIZE SOIL ACIDITY AND SUPPLY CALCIUM AND MAGNESIUM TO GRASSES AND LEGUMES. TABLE BELOW IS A GENERAL GUIDELINE FOR LIMESTONE APPLICATION.

SOIL TEXTURE	TONS/ACRE	LBS./1,000 SQ. FT.
CLAY, CLAY LOAM, AND HIGH ORGANIC SOIL	3	135
SANDY LOAM, LOAM, SILT LOAM	2	90
LOAMY SAND, SAND	1	45

PULVERIZED DOLOMITIC LIMESTONE IS PREFERRED FOR MOST SOILS SOUTH OF THE NEW BRUNSWICK-TRENTON LINE.

B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.

C. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED AS ABOVE.

D. SOILS HIGH ON SULFIDES OR HAVING A PH OF 4 OR LESS REFER TO STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, PG. 1-1 OF THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.

SEEDING

A. SELECT SEED FROM RECOMMENDATIONS IN TABLE.

SEED TYPES	SEEDING RATES 1/ (pounds)		OPTIMUM SEEDING DATE 2/ Based on Plant Hardiness Zone 3/			OPTIMUM SEED DEPTH 4/ (inches)
	Per Acre	Per 1,000 Sq. Ft.	ZONE 5	ZONE 6	ZONE 7	
COOL SEASON GRASSES						
Perennial ryegrass	100	1.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	0.5
Spring Oats	86	2.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	1.0
Winter Barley	96	2.2	8/1-9/15	8/15-10/1	8/15-10/15	1.0
Winter Cereal Rye	112	2.8	8/1-11/1	8/1-11/15	8/1-12/15	1.0
WARM SEASON GRASSES						
Pearl millet	20	0.5	6/1-8/1	5/15-8/15	5/1-9/1	1.0
Millet (German or Hungarian)	30	0.7	6/1-8/1	5/15-8/15	5/1-9/1	1.0
Weeping lovegrass	5	0.2	6/1-8/1	5/15-8/15	5/1-9/1	0.25

1/ Seeding rate for warm season grass, shall be adjusted to reflect the amount of Pure Line Seed (PLS) as determined by a germination test result. No adjustment is required for cool season grasses.

2/ May be planted throughout summer if soil moisture is adequate or can be irrigated

3/ Plant Hardiness Zone (see below)

4/ Twice the depth for sandy soils

Zone 5b (-10 to -15)
Zone 6a (-5 to -10)
Zone 6b (0 to -5)
Zone 7a (5 to 0)
Zone 7b (10 to 5)

A. CONVENTIONAL SEEDING - APPLY SEED UNIFORMITY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTPACKER SEEDER, EXCEPT FOR DRILLED, HYDROSEEDER OR CULTPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL, TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.

B. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK OR TRAILER MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.

C. AFTER SEEDING, FIRING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.

IV. MULCHING

MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. (THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS MULCHING REQUIREMENT.)

A. STRAW OR HAY, UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, OR SALT HAY TO BE APPLIED AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO THE PRESENCE OF WEED SEED.

APPLICATION, SPREAD UNIFORMLY BY HAND MECHANICALLY SO THAT APPROXIMATELY 85% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.

ANCHORING SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.

METHODS AND MATERIALS

I. SITE PREPARATION

A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, P. 19-1.

B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.

C. IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).

II. SEEDBED PREPARATION

A. APPLY GROUND LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS THOSE OFFERED BY RUTGERS CO-OPERATIVE EXTENSION. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS CO-OPERATIVE EXTENSION OFFICES. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE. APPLY LIMESTONE IN ACCORDANCE WITH THE TABLE BELOW AND THE RESULTS OF SOIL TESTING. CALCIUM CARBONATE IS THE EQUIVALENT AND STANDARD FOR MEASURING THE ABILITY OF LIMING MATERIALS TO NEUTRALIZE SOIL ACIDITY AND SUPPLY CALCIUM AND MAGNESIUM TO GRASSES AND LEGUMES. TABLE BELOW IS A GENERAL GUIDELINE FOR LIMESTONE APPLICATION RATES.

SOIL TEXTURE	TONS/ACRE	LBS./1,000 SQ. FT.
CLAY, CLAY LOAM, AND HIGH ORGANIC SOIL	3	135
SANDY LOAM, LOAM, SILT LOAM	2	90
LOAMY SAND, SAND	1	45

PULVERIZED DOLOMITIC LIMESTONE IS PREFERRED FOR MOST SOILS SOUTH OF THE NEW BRUNSWICK-TRENTON LINE.

B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.

C. IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).

D. HIGH ACID PRODUCING SOILS HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE BEFORE INITIATING SEEDBED PREPARATION. SEE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS.

III. SEEDING

SEED MIX SHALL BE AS FOLLOWS:

KIND OF SEED	Minimum Purity-%		% Of Total Weight of Mixture	Application Rate lb./acre
	Minimum Germination-%	Minimum Weight of Mixture		
'Arid 3' Tall Fescue	95	80	20	40
'Jamestown 2' Chewing Fescue	95	85	20	40
'Award' Kentucky Bluegrass	95	85	50	100
'Monterey 2' Perennial Ryegrass	95	85	10	20

200 lb./acre

APPLYING THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEED BED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.

B. CONVENTIONAL SEEDING - APPLY SEED UNIFORMITY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTPACKER SEEDER, EXCEPT FOR DRILLED, HYDROSEEDER OR CULTPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.

C. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK OR TRAILER MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.

D. AFTER SEEDING, FIRING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.

STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

DEFINITION

ESTABLISHMENT OF PERMANENT VEGETATIVE COVER ON EXPOSED SOILS WHERE PERENNIAL VEGETATION IS NEEDED FOR LONG TERM PROTECTION.

PURPOSE

TO PERMANENTLY STABILIZE THE SOIL, ASSURING CONSERVATION OF SOIL AND WATER, AND TO ENHANCE THE ENVIRONMENT.

WATER QUALITY ENHANCEMENT

SLOWS THE OVERLAND MOVEMENT OF STORMWATER RUNOFF, INCREASES INFILTRATION AND RETAINS SOIL AND NUTRIENTS ON SITE, PROTECTING STREAMS OR OTHER STORMWATER CONVEYANCES.

WHERE APPLICABLE

ON EXPOSED SOILS THAT HAVE A POTENTIAL FOR CAUSING OFF-SITE ENVIRONMENTAL DAMAGE.

METHODS AND MATERIALS

I. SITE PREPARATION

A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, P. 19-1.

B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.

C. IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).

II. SEEDBED PREPARATION

A. APPLY GROUND LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS THOSE OFFERED BY RUTGERS CO-OPERATIVE EXTENSION. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS CO-OPERATIVE EXTENSION OFFICES. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE. APPLY LIMESTONE IN ACCORDANCE WITH THE TABLE BELOW AND THE RESULTS OF SOIL TESTING. CALCIUM CARBONATE IS THE EQUIVALENT AND STANDARD FOR MEASURING THE ABILITY OF LIMING MATERIALS TO NEUTRALIZE SOIL ACIDITY AND SUPPLY CALCIUM AND MAGNESIUM TO GRASSES AND LEGUMES. TABLE BELOW IS A GENERAL GUIDELINE FOR LIMESTONE APPLICATION RATES.

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LOAMY SAND, SAND	1	45

PULVERIZED DOLOMITIC LIMESTONE IS PREFERRED FOR MOST SOILS SOUTH OF THE NEW BRUNSWICK-TRENTON LINE.

B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.

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D. HIGH ACID PRODUCING SOILS HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE BEFORE INITIATING SEEDBED PREPARATION. SEE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS.

III. SEEDING

SEED MIX SHALL BE AS FOLLOWS:

KIND OF SEED	Minimum Purity-%		% Of Total Weight of Mixture	Application Rate lb./acre
	Minimum Germination-%	Minimum Weight of Mixture		
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'Award' Kentucky Bluegrass	95	85	50	100
'Monterey 2' Perennial Ryegrass	95	85	10	20

200 lb./acre

B. CONVENTIONAL SEEDING - APPLY SEED UNIFORMITY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTPACKER SEEDER, EXCEPT FOR DRILLED, HYDROSEEDER OR CULTPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.

C. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK OR TRAILER MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.

D. AFTER SEEDING, FIRING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.

IV. MULCHING

MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. (THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS MULCHING REQUIREMENT.)

A. STRAW OR HAY, UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, OR SALT HAY TO BE APPLIED AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO THE PRESENCE OF WEED SEED.

APPLICATION, SPREAD UNIFORMLY BY HAND MECHANICALLY SO THAT APPROXIMATELY 85% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.

ANCHORING SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.

METHODS AND MATERIALS

I. SITE PREPARATION

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B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.

C. IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).

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D. HIGH ACID PRODUCING SOILS HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE BEFORE INITIATING SEEDBED PREPARATION. SEE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS.

III. SEEDING

SEED MIX SHALL BE AS FOLLOWS:

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200 lb./acre

B. CONVENTIONAL SEEDING - APPLY SEED UNIFORMITY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTPACKER SEEDER, EXCEPT FOR DRILLED, HYDROSEEDER OR CULTPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.

C. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK OR TRAILER MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.

D. AFTER SEEDING, FIRING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.

STANDARD FOR STABILIZATION WITH MULCH ONLY

DEFINITION

STABILIZING EXPOSED SOILS WITH NON-VEGETATIVE MATERIAL.

PURPOSE

TO PROTECT EXPOSED SOIL SURFACES FROM EROSION DAMAGE AND TO REDUCE OFFSITE ENVIRONMENTAL DAMAGE.

WATER QUALITY ENHANCEMENT

PROVIDES TEMPORARY MECHANICAL PROTECTION AGAINST WIND OR RAINFALL INDUCED SOIL EROSION UNTIL PERMANENT VEGETATIVE COVER MAY BE ESTABLISHED.

WHERE APPLICABLE

THIS PRACTICE IS APPLICABLE TO AREAS SUBJECT TO EROSION, WHERE THE SEASON AND OTHER CONDITIONS MAY NOT BE SUITABLE FOR GROWING AN EROSION RESISTANT COVER OR WHERE STABILIZATION IS NEEDED FOR A SHORT PERIOD UNTIL MORE SUITABLE PROTECTION CAN BE APPLIED.

METHOD AND MATERIALS

I. SITE PREPARATION

A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, PG. 19-1.

B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.

2. PROTECTIVE MATERIALS

A. UNROTTED SMALL-GRAIN STRAW, OR SALT HAY 2.0 TO 2.5 TONS PER ACRE IS SPREAD UNIFORMLY AT 90 TO 115 POUNDS PER 1,000 SQUARE FEET AND ANCHORED WITH A MULCH ANCHORING TOOL, LIQUID MULCH BINDERS, OR NETTING TOWNS. OTHER SUITABLE MATERIALS MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT.

B. ASPHALT EMULSIONS RECOMMENDED AT THE RATE OF 600 TO 1,200 GALLONS PER ACRE. THIS IS SUITABLE FOR A LIMITED PERIOD OF TIME WHERE TRAVEL BY PEOPLE, ANIMALS, OR MACHINES IS NOT A PROBLEM.

C. SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE MANUFACTURER.

D. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE (OR ACCORDING TO THE MANUFACTURER'S REQUIREMENTS) MAY BE APPLIED BY A HYDROSEEDER.

E. MULCH NETTING, SUCH AS PAPER JUTE, EXCELSIOR, COTTON, OR PLASTIC, MAY BE USED.

F. WOODCHIPS APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 2 INCHES MAY BE USED. WOODCHIPS WILL NOT BE USED ON AREAS WHERE FLOWING WATER COULD WASH THEM INTO AN INLET AND PLUG IT.

G. GRAVEL, CRUSH STONE, OR SLAG AT THE RATE OF 9 CUBIC YARDS PER 1,000 SQ. FT. APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 3 INCHES MAY BE USED. SIZE 2 OR 3 (ASTM C-33) IS RECOMMENDED.

A. PEG AND DRIVE - DRIVE 8 TO 10 INCH PEG TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRIS-CROSS AND SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.

B. MULCH NETTINGS - STAPLE PAPER, JUTE, COTTON, AND PLASTIC NETTINGS OVER MULCH. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED. NETTING IS USUALLY AVAILABLE IN ROLLS 4 FEET WIDE AND 300 FEET LONG.

C. CRIMPER MULCH ANCHORING COULTER TOOL - A TRACTOR-DRAWN IMPLEMENT ESPECIALLY DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE. THIS PRACTICE AFFORDS MAXIMUM EROSION CONTROL, BUT ITS USE IS LIMITED TO THOSE SLOPES UPON WHICH THE TRACTOR CAN OPERATE SAFELY. SOIL PENETRATION SHOULD BE ABOUT 3 TO 4 INCHES. ON SLOPING LAND, THE OPERATION SHOULD BE ON THE CONTOUR.

D. LIQUID MULCH - BINDERS

1. APPLICATION SHOULD BE HEAVIER AT EDGE WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.

2. USE ONE OF THE FOLLOWING:

a. EMULSIFIED ASPHALT - (SS-1, CSS-1, CMS-2, MS-2, RS-1, RS-2, CRS-1, AND CRS-2). APPLY 0.04 GAL/SQ/YD OR 194 GAL/ACRE ON FLAT AREAS AND ON SLOPES LESS THAN 8FT OF MORE HIGH, USE 0.075 GAL/SQ/YD OR 363 GAL/ACRE. THIS MATERIALS MAY BE DIFFICULT TO APPLY UNIFORMLY AND WILL DISCOLOR SURFACES.

b. ORGANIC AND VEGETABLE BASED BINDERS - NATURALLY OCCURRING, POWDER BASED HYDROPHILIC MATERIAL THAT MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANE NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOXIC EFFECT OF IMPEDE GROWTH OF TURFGRASS. VEGETABLE BASED GELS SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER.

c. SYNTHETIC BINDERS - HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

VI. IRRIGATION (WHERE FEASIBLE)

IF SOIL MOISTURE IS DEFICIENT, AND MULCH IS NOT USED, SUPPLY NEW SEEDLINGS WITH ADEQUATE WATER (A MINIMUM OF 1/4 INCH TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDLINGS ARE MADE IN ABNORMALLY DRY OR HOT WEATHER OR ON DROUGHTY SITES.

VII. TOPDRESSING

SINCE SLOW RELEASE NITROGEN FERTILIZER (WATER INSOLUBLE IS PRESCRIBED IN SECTION II.A. SEEDBED PREPARATION IN THIS STANDARD, NO FOLLOW-UP OF TOPDRESSING IS MANDATORY, AN EXCEPTION MAY BE MADE WHERE GROSS NITROGEN DEFICIENCY EXISTS TO THE EXTENT THAT TURF FAILURE MAY DEVELOP. IN THAT INSTANCE, TOPDRESS WITH 10-10-10 OR EQUIVALENT AT 400 POUNDS PER 1,000 SQUARE FEET.

ESTABLISHING PERMANENT VEGETATIVE STABILIZATION

THE QUAL