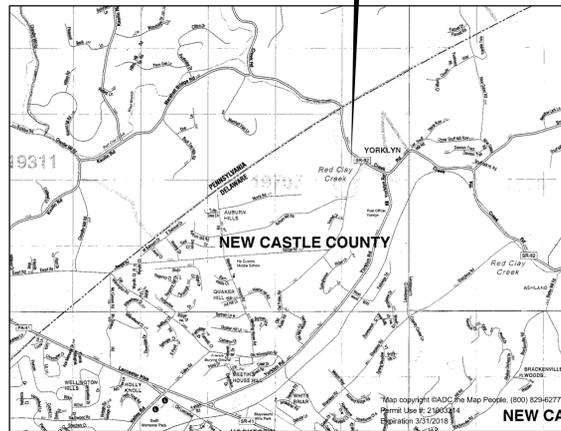


STATE OF DELAWARE  
 DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL  
 DIVISION OF PARKS & RECREATION

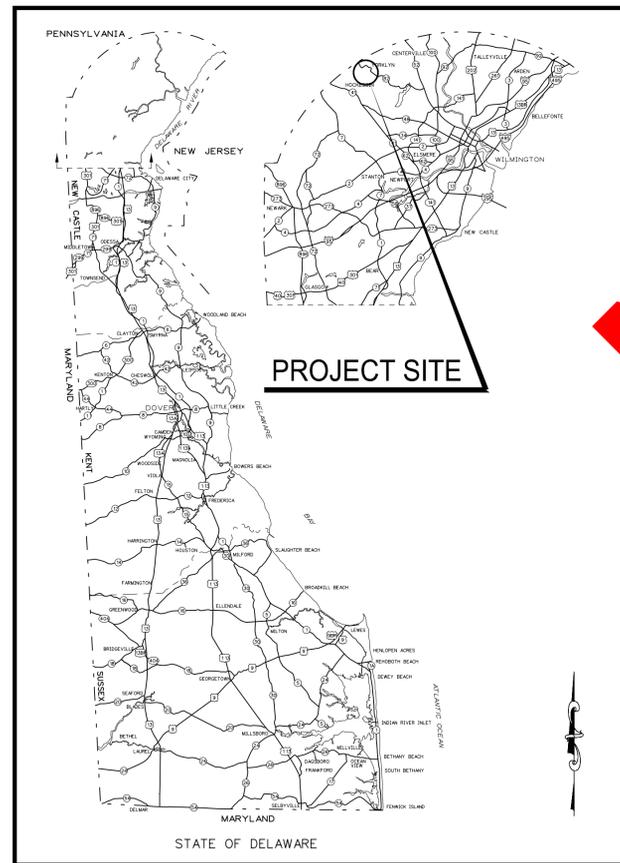
AUBURN HEIGHTS PRESERVE  
 PAPER MILL BRIDGE

JUNE 30, 2017

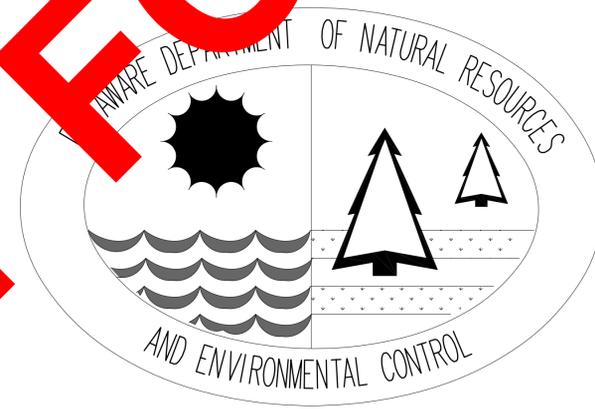
PROJECT SITE



SITE MAP



LOCATION MAP



**NOT FOR BID**



SHEET INDEX  
 SCALE: 1"=200'

INDEX OF SHEETS	
SHEET NO.:	TITLE
C-1	GENERAL NOTES & LEGEND
C-2	HORIZONTAL AND VERTICAL CONTROL PLAN
C-3	TYPICAL SECTIONS
C-4 TO C-5	CONSTRUCTION PLANS
C-6 TO C-8	PROFILES
C-9	FARM LANE & PAPER MILL PARKING LOTS LAYOUT PLAN
C-10	MUSEUM DRIVE PARKING LOT LAYOUT PLAN
C-11	DEMOLITION PLAN
C-12	SETTLING TANK DETAIL
C-13 TO C-15	CONSTRUCTION DETAILS
C-16 TO C-17	SIGNING AND STRIPING PLANS
C-18 TO C-19	ENTRANCE PLANS
C-20	OVERALL SITE PLAN
ES-1	CONSTRUCTION SEQUENCING & EROSION AND SEDIMENT CONTROL NOTES
ES-2 TO ES-3	CONSTRUCTION SEQUENCING & EROSION AND SEDIMENT CONTROL PLANS
ES-4 TO ES-7	CONSTRUCTION SEQUENCING & EROSION AND SEDIMENT CONTROL DETAILS
SN-1	STRUCTURAL GENERAL NOTES
S1-1 TO S1-5	PAPER MILL BRIDGE PLANS
S2-1 TO S2-2	MILL RACE DECKOVER STRUCTURE PLANS
SD-1 TO SD-4	STRUCTURAL DETAILS

SHEETS PREPARED BY CENTURY ENGINEERING INC.	
SHEET NO.:	TITLE
S3-1	CONNECTOR BOARDWALK PLAN, ELEVATION, SECTION
S3-2	CONNECTOR BOARDWALK ALIGNMENT, PROFILE, SCHEDULES
S3-3	CONNECTOR BOARDWALK DETAILS: OVERLOOK, RAILING, SECTIONS

SHEETS PREPARED BY OWNER	
SHEET NO.:	TITLE
P-1	BENGE ROAD PARKING LOT EXISTING CONDITIONS
P-2	BENGE ROAD PARKING LOT PROPOSED CONDITIONS
P-3	BENGE ROAD PARKING LOT STRIPING PLAN
R-1	RAILING DETAILS

FOR INFORMATION ONLY	
SHEET NO.:	TITLE
	THE MCINTYRE IRON BRIDGE (PAPER MILL ROAD BRIDGE)

**LEGEND**  
 □ CONSTRUCTION PLAN

PREPARED BY  
 THE CONSULTING FIRM OF

**RK&K** RUMMEL, KLEPPER & KAHL, LLP  
 CONSULTING ENGINEERS  
 700 E PRATT ST., SUITE 500  
 BALTIMORE, MD 21202

*Nancy R. Bergman*  
 DIRECTOR 6/30/2017  
 DATE

PREPARED FOR:  
 OFFICE OF DESIGN & DEVELOPMENT  
 DELAWARE DIVISION OF PARKS & RECREATION  
 89 KINGS HIGHWAY  
 DOVER, DELAWARE 19901  
 PHONE: 302-739-9231  
 FAX: (302) 739-7026

DATE: JUNE 30, 2017

6/30/2017 10:07:32 AM  
 \\BALSRV01\2014\2014\_14078\_DNREC\TASK 10 - MB\_NVF\CADD\CONTRACTS\FARMLN\_PAPERMILL\PLANS\VT101\_AHP.DGN



CONTROL COORDINATES

DESCRIPTION	STATION	NORTHING	EASTING
<b>FARM LANE @ CONSTRUCTION</b>			
PC	107+16.55	658368.2517	581960.7739
PI	107+67.39	658323.8619	581985.5445
CC		658429.1630	582069.9289
PT	108+13.11	658309.3586	582034.2652
PC	109+80.47	658261.6088	582194.6697
PI	109+94.70	658257.5502	582208.3036
CC		658154.2641	582162.7149
PT	110+08.77	658250.2122	582220.4900
POE	111+00.00	658203.1514	582298.6449

CONTROL COORDINATES

DESCRIPTION	STATION	NORTHING	EASTING
<b>PAPER MILL BRIDGE @ CONSTRUCTION</b>			
POB	201+00.00	658242.2391	582233.7311
PC	201+13.35	658252.1240	582242.9934
PI	201+35.61	658268.2246	582258.0800
CC		658217.9364	582279.4791
PT	201+55.10	658267.9320	582280.1423
POE	203+25.00	658265.6784	582450.0244

CONTROL COORDINATES

DESCRIPTION	STATION	NORTHING	EASTING
<b>MUSEUM DRIVE @ CONSTRUCTION</b>			
POB	300+00.00	658207.6110	582025.5676
PC	301+34.19	658336.2221	582063.8530
PI	301+40.39	658342.1685	582065.6231
CC		658341.9284	582044.6843
PT	301+46.22	658348.0727	582063.7171
PC	302+31.93	658429.6345	582037.3866
PI	302+53.49	658450.1590	582030.7606
CC		658441.9232	582075.4521
PT	302+71.49	658466.9734	582044.2675
PC	303+41.49	658521.5468	582088.1056
PI	303+54.83	658531.9485	582096.4611
CC		658546.5971	582056.9209
PT	303+67.24	658545.2833	582096.8993
PI	304+57.96	658635.9519	582099.8787
POE	305+05.00	658676.5014	582123.7196

CONTROL COORDINATES

DESCRIPTION	STATION	NORTHING	EASTING
<b>BENGE ROAD @ CONSTRUCTION</b>			
POB	400+00.00	657753.0773	582045.8603
PC	404+38.75	658187.1721	582109.5839
PI	405+30.71	658278.1610	582122.9408
CC		658078.9744	582846.6426
PT	406+21.75	658363.1700	582158.0244
PC	406+68.54	658406.4255	582175.8761
PI	407+29.68	658462.9381	582199.1991
CC		658238.1122	582583.7064
PT	407+90.04	658510.9795	582237.0100
POE	409+00.00	658597.3850	582305.0154

NOTE:

1. TOPOGRAPHY SUPPLIED BY DNREC. TOPOGRAPHY WAS FLOWN BY AXIS GEOSPATIAL, LLC ON 03-13-2004.

FARM LANE CURVE DATA

①	②
$\Delta = 44^{\circ}15'36.0138''$ Left	$\Delta = 14^{\circ}28'36.4534''$ Right
$Dc = 45^{\circ}50'11.8450''$	$Dc = 5^{\circ}09'25.0056''$
$R = 125.0000$	$R = 112.0000$
$T = 50.8335$	$T = 14.2252$
$L = 96.5603$	$L = 28.2988$
$E = 9.9409$	$E = 0.8998$

PAPER MILL CURVE DATA

③
$\Delta = 47^{\circ}37'20.517''$ Right
$Dc = 114^{\circ}35'29.6125''$
$R = 50.0000$
$T = 22.0643$
$L = 41.5584$
$E = 4.6519$

MUSEUM DRIVE CURVE DATA

④	⑤	⑥
$\Delta = 34^{\circ}28'08.3753''$ Left	$\Delta = 56^{\circ}39'57.9159''$ Right	$\Delta = 36^{\circ}53'32.5753''$ Left
$Dc = 286^{\circ}28'44.0312''$	$Dc = 143^{\circ}14'22.0156''$	$Dc = 143^{\circ}14'22.0156''$
$R = 20.0000$	$R = 40.0000$	$R = 40.0000$
$T = 6.2042$	$T = 21.5675$	$T = 13.3421$
$L = 12.0319$	$L = 39.5604$	$L = 25.7557$
$E = 0.9402$	$E = 5.4440$	$E = 2.1665$

BENGE ROAD CURVE DATA

⑦	⑧
$\Delta = 14^{\circ}04'29.8624''$ Right	$\Delta = 15^{\circ}46'42.0819''$ Right
$Dc = 7^{\circ}41'28.1152''$	$Dc = 12^{\circ}59'11.6882''$
$R = 744.9579$	$R = 441.971$
$T = 91.9640$	$T = 61.1362$
$L = 183.0022$	$L = 121.4987$
$E = 5.6550$	$E = 4.2157$

SURVEY CONTROL POINTS

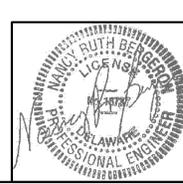
POINT NO.	NORTHING	EASTING	ELEVATION
1006	658607.9360	581356.9390	235.0
1007	659264.6300	580122.9570	354.7
1009	660312.0600	581459.1300	236.6
2146	657181.3710	583200.6330	187.1
12141	659233.1150	583933.9330	171.9



NOT FOR BID



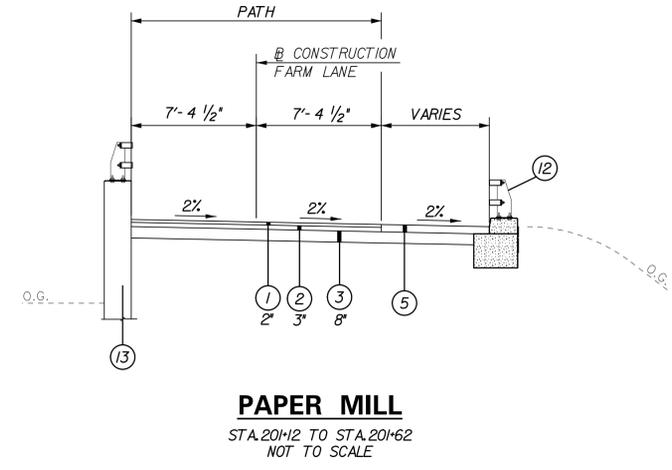
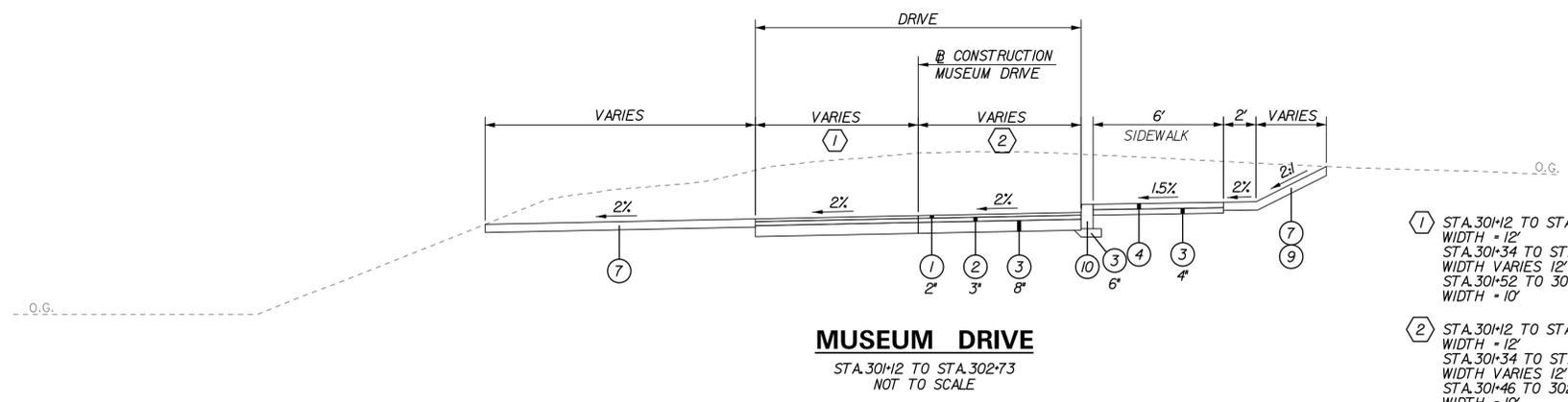
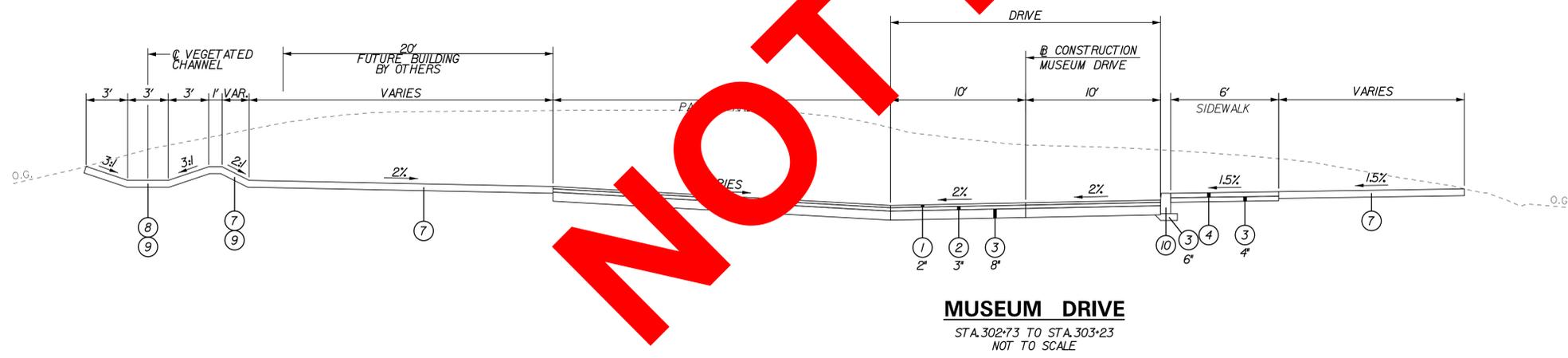
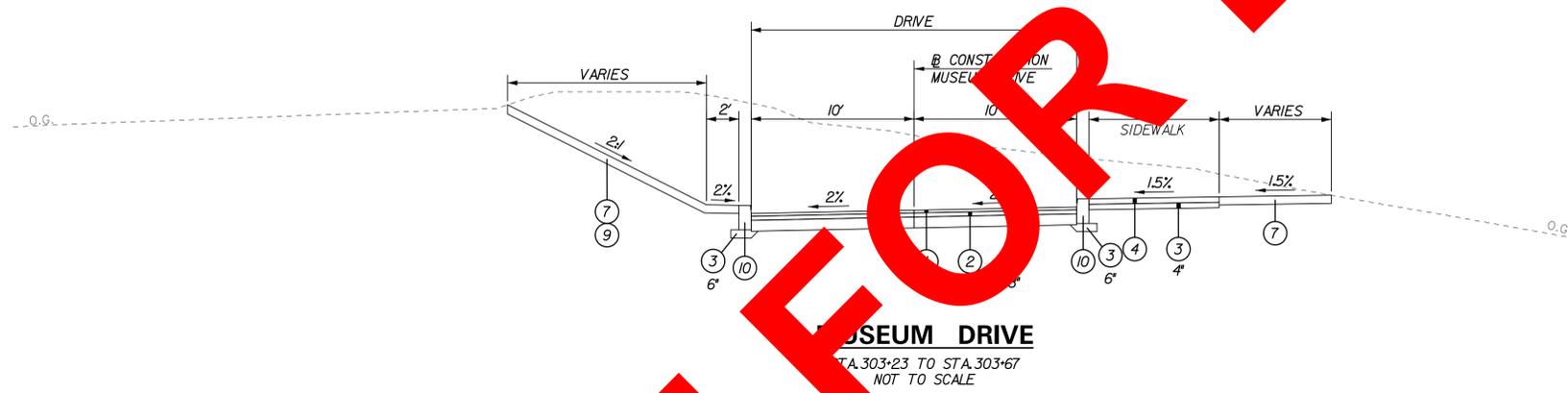
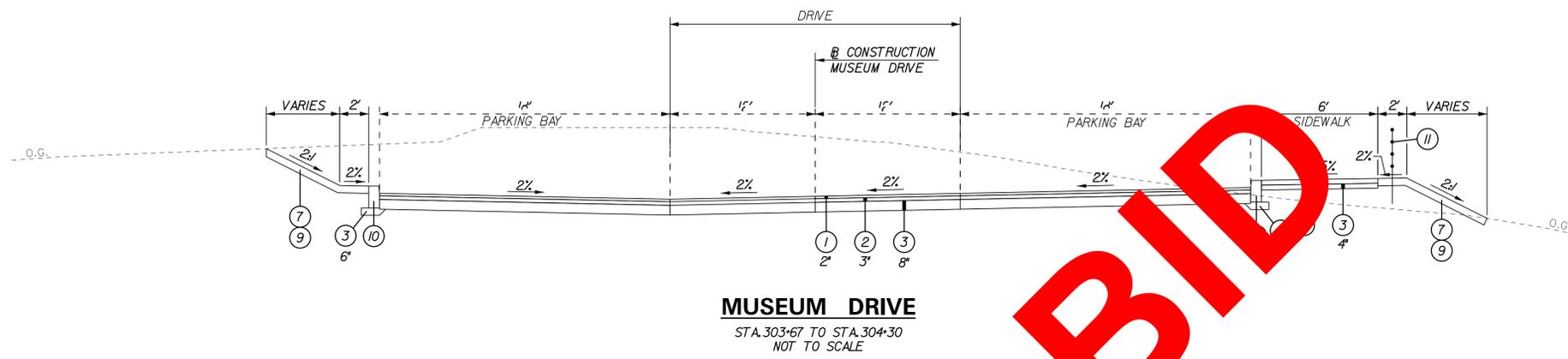
BY: _____ DATE: _____	DESCRIPTION: _____ DATE: _____
<b>AUBURN HEIGHTS PRESERVE PAPER MILL BRIDGE</b>	
<b>HORIZONTAL &amp; VERTICAL CONTROL PLAN</b>	
DESIGNED BY: RKK	
DRAWN BY: RKK	
BUILDING NO.: N/A	
DATE: 4/28/2017	
SCALE: 1" = 50'	
SHEET NO.: <b>C-2</b>	
PARKS PROJECT #: NVF-4	
CONTRACT #: 2015-NVF-100	



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NOT FOR BID



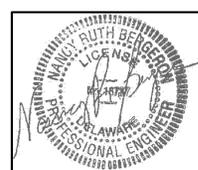
- ① STA. 301+2 TO STA. 301+34  
WIDTH = 12'
- ② STA. 301+34 TO STA. 301+53  
WIDTH VARIES 12' TO 10'
- ③ STA. 301+52 TO STA. 302+73  
WIDTH = 10'
- ④ STA. 301+2 TO STA. 301+34  
WIDTH = 12'
- ⑤ STA. 301+34 TO STA. 301+46  
WIDTH VARIES 12' TO 10'
- ⑥ STA. 301+46 TO STA. 302+73  
WIDTH = 10'

- PAVEMENT LEGEND**
- ① WMA, SUPERPAVE, TYPE C, PG 64-22, 160 GYRATIONS (CARBONATE STONE) (401801)
  - ② WMA, SUPERPAVE, TYPE B, PG 64-22, 160 GYRATIONS (401810)
  - ③ GRADED AGGREGATE BASE COURSE, TYPE B, GABC (302005)
  - ④ 4" P.C.C. SIDEWALK
  - ⑤ 5" SCORED P.C.C. SIDEWALK
  - ⑥ DELDOT BORROW TYPE F, OR ON-SITE EXCAVATED MATERIAL MEETING THE REQUIREMENT OF BORROW TYPE F
  - ⑦ 6" TOPSOIL, SEED MIX TYPE 6 & STRAW MULCH (EXISTING GROUND SHALL BE DISCED OR ROTOTILLED BEFORE PLACING TOPSOIL)
  - ⑧ 6" TOPSOIL, SEED MIX TYPE 10 (EXISTING GROUND SHALL BE DISCED OR ROTOTILLED BEFORE PLACING TOPSOIL)
  - ⑨ SOIL STABILIZATION MATTING
  - ⑩ P.C.C. CURB (SEE PLANS)
  - ⑪ SPLIT RAIL FENCE (SEE PLANS)
  - ⑫ STEEL TUBE RAIL (SEE PLANS)
  - ⑬ WING WALL (SEE STRUCTURAL PLANS)

BY:	
DESCRIPTION:	
DATE:	
DATE:	
DESCRIPTION:	

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
TYPICAL SECTIONS**

DESIGNED BY: RKK  
 DRAWN BY: RKK  
 BUILDING NO.: N/A  
 DATE:  
 SCALE: N.T.S.  
 SHEET NO.: **C-3**  
 PARKS PROJECT #: NVF-4  
 CONTRACT #: 2015-NVF-100



**ALLOWANCE No. 1 (PATH CONNECTION TO OFFICE)**

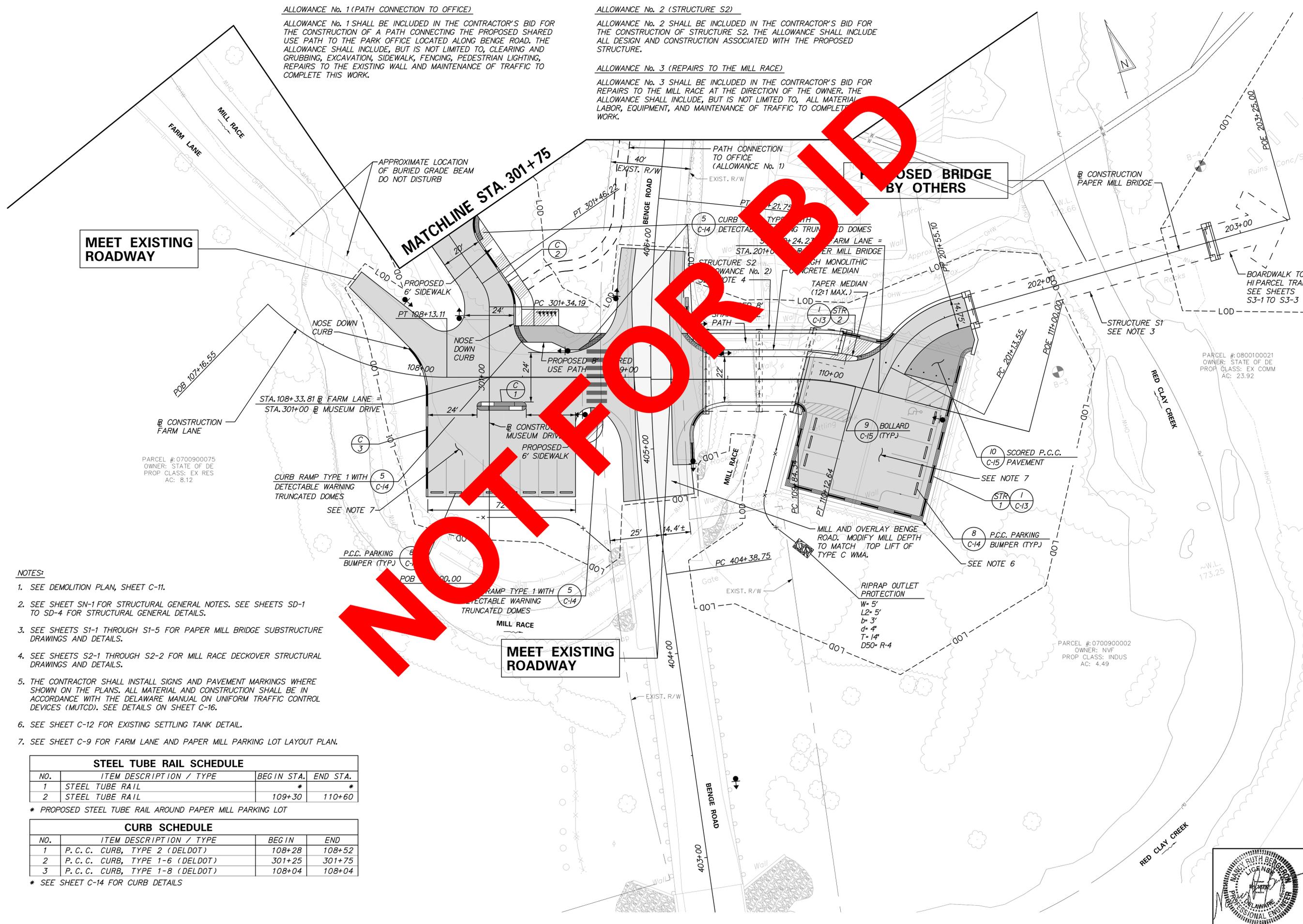
ALLOWANCE No. 1 SHALL BE INCLUDED IN THE CONTRACTOR'S BID FOR THE CONSTRUCTION OF A PATH CONNECTING THE PROPOSED SHARED USE PATH TO THE PARK OFFICE LOCATED ALONG BERGE ROAD. THE ALLOWANCE SHALL INCLUDE, BUT IS NOT LIMITED TO, CLEARING AND GRUBBING, EXCAVATION, SIDEWALK, FENCING, PEDESTRIAN LIGHTING, REPAIRS TO THE EXISTING WALL AND MAINTENANCE OF TRAFFIC TO COMPLETE THIS WORK.

**ALLOWANCE No. 2 (STRUCTURE S2)**

ALLOWANCE No. 2 SHALL BE INCLUDED IN THE CONTRACTOR'S BID FOR THE CONSTRUCTION OF STRUCTURE S2. THE ALLOWANCE SHALL INCLUDE ALL DESIGN AND CONSTRUCTION ASSOCIATED WITH THE PROPOSED STRUCTURE.

**ALLOWANCE No. 3 (REPAIRS TO THE MILL RACE)**

ALLOWANCE No. 3 SHALL BE INCLUDED IN THE CONTRACTOR'S BID FOR REPAIRS TO THE MILL RACE AT THE DIRECTION OF THE OWNER. THE ALLOWANCE SHALL INCLUDE, BUT IS NOT LIMITED TO, ALL MATERIAL LABOR, EQUIPMENT, AND MAINTENANCE OF TRAFFIC TO COMPLETE THIS WORK.



**MEET EXISTING ROADWAY**

**MEET EXISTING ROADWAY**

- NOTES:**
- SEE DEMOLITION PLAN, SHEET C-11.
  - SEE SHEET SN-1 FOR STRUCTURAL GENERAL NOTES. SEE SHEETS SD-1 TO SD-4 FOR STRUCTURAL GENERAL DETAILS.
  - SEE SHEETS S1-1 THROUGH S1-5 FOR PAPER MILL BRIDGE SUBSTRUCTURE DRAWINGS AND DETAILS.
  - SEE SHEETS S2-1 THROUGH S2-2 FOR MILL RACE DECKOVER STRUCTURAL DRAWINGS AND DETAILS.
  - THE CONTRACTOR SHALL INSTALL SIGNS AND PAVEMENT MARKINGS WHERE SHOWN ON THE PLANS. ALL MATERIAL AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). SEE DETAILS ON SHEET C-16.
  - SEE SHEET C-12 FOR EXISTING SETTLING TANK DETAIL.
  - SEE SHEET C-9 FOR FARM LANE AND PAPER MILL PARKING LOT LAYOUT PLAN.

**STEEL TUBE RAIL SCHEDULE**

NO.	ITEM DESCRIPTION / TYPE	BEGIN STA.	END STA.
1	STEEL TUBE RAIL	*	*
2	STEEL TUBE RAIL	109+30	110+60

\* PROPOSED STEEL TUBE RAIL AROUND PAPER MILL PARKING LOT

**CURB SCHEDULE**

NO.	ITEM DESCRIPTION / TYPE	BEGIN	END
1	P. C. C. CURB, TYPE 2 (DELDOT)	108+28	108+52
2	P. C. C. CURB, TYPE 1-6 (DELDOT)	301+25	301+75
3	P. C. C. CURB, TYPE 1-8 (DELDOT)	108+04	108+04

\* SEE SHEET C-14 FOR CURB DETAILS

**BY:** \_\_\_\_\_

**DESCRIPTION:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**DESCRIPTION:** \_\_\_\_\_

---

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
CONSTRUCTION PLANS**

---

**DESIGNED BY:** RKK

**DRAWN BY:** RKK

**BUILDING NO.:** N/A

**DATE:** 4/28/2017

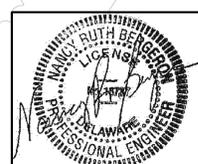
**SCALE:** 1" = 20'

**SHEET NO.:** **C-4**

**PARKS PROJECT #:** NVF-4

**CONTRACT #:** 2015-NVF-100

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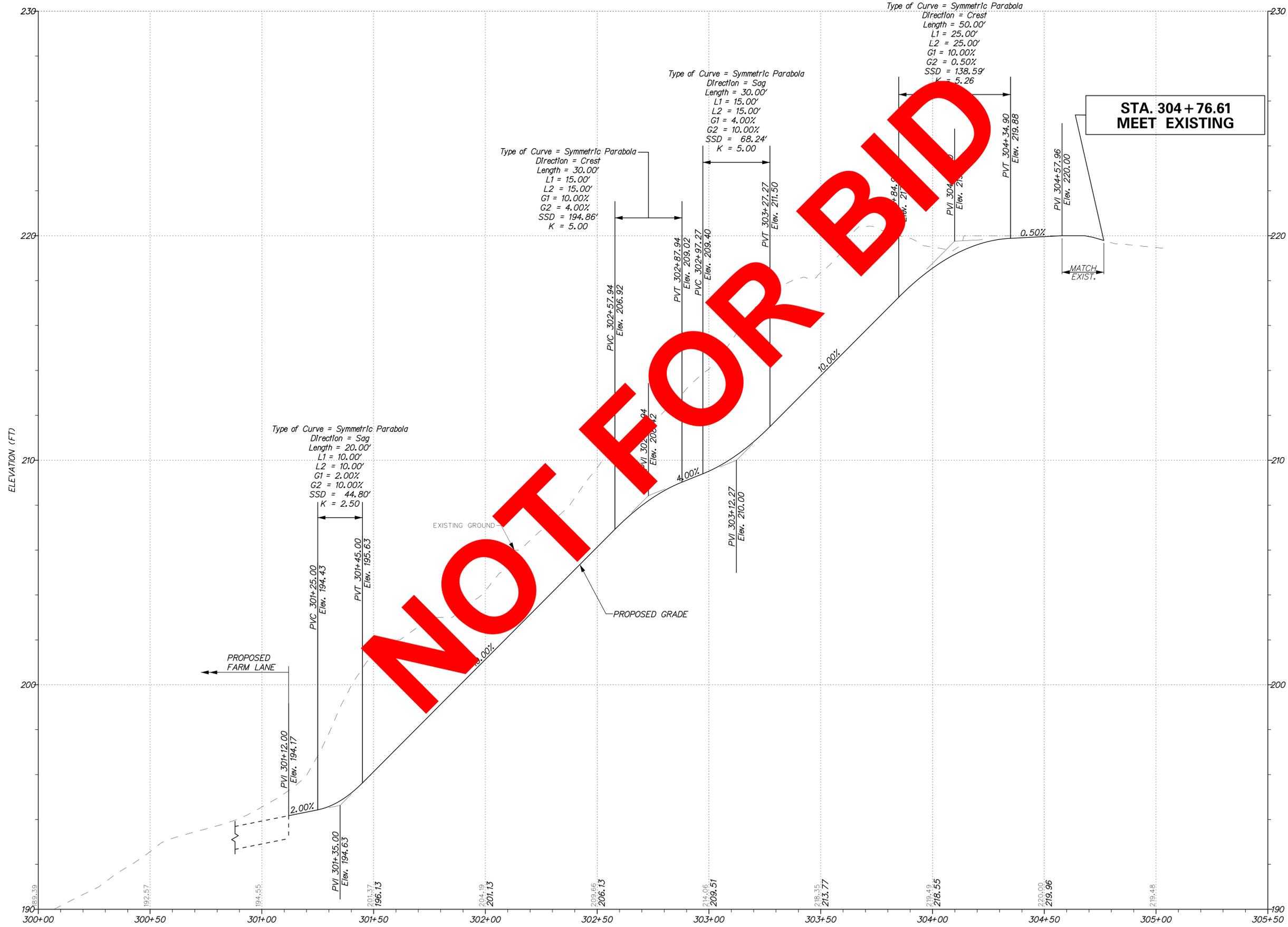




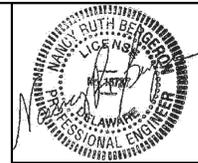




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NOT FOR BID



BY:	
DATE:	
DESCRIPTION:	

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
PROFILES**

DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	AS SHOWN
SHEET NO.:	<b>C-8</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



**STA. 304 + 76.61  
MEET EXISTING**

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**SPOT GRADE LEGEND FOR ENTRANCE ELEVATIONS**

POINT NO.	NORTHING	EASTING	ELEVATION
100	658307.0180	582014.8236	MEET EX.
101	658295.0496	582020.2956	194.27
102	658256.4245	582008.7976	192.25
103	658235.8822	582077.8049	191.14
104	658260.7895	582085.2194	191.27
105	658266.5401	582086.9313	191.30
106	658265.2914	582091.1258	191.03
107	658265.408	582089.4139	191.00
108	658265.990	582100.6077	190.80
109	658265.990	582094.8570	190.83
110	658275.990	582097.2300	190.91
111	658265.990	582087.8846	191.31
112	658265.990	582102.4027	190.83
113	658265.990	582102.4027	190.83
114	658265.990	582102.4027	190.83
115	658265.990	582102.4027	190.83
116	658265.990	582102.4027	190.83
117	658304.2849	582093.3684	191.77
118	658307.2523	582083.4001	192.63
119	658315.2344	582074.1110	194.59
120	658323.9534	58202.8610	194.67

POINT NO.	NORTHING	EASTING	ELEVATION
121	658322.6561	582023.9692	194.70
122	658324.4622	582043.1121	MEET EX.
123	658334.9281	582034.0928	195.03
124	658335.3132	582051.0620	194.44
125	658339.4650	582052.2979	194.53
126	658351.3155	582052.1620	196.18
127	658332.0145	582070.3609	198.81
128	658368.0192	582067.7860	197.74
129	658344.8299	582075.2722	195.58
130	658332.9793	582075.4081	195.03
131	658346.9036	582081.6957	196.27
132	658338.6857	582084.3487	195.36
133	658329.2053	582084.4574	194.84
134	658336.8424	582078.6389	195.45
135	658330.9171	582078.7068	194.93
136	658322.9217	582076.3267	194.85
137	658321.2099	582082.0773	194.76
138	658325.4536	582095.8610	194.66
139	658317.7861	582093.5786	194.54
140	658312.0612	582150.3151	MEET EX.

POINT NO.	NORTHING	EASTING	ELEVATION
141	658242.1473	582131.2062	MEET EX.
142	658297.1132	582150.0789	191.12
143	658287.0232	582155.9343	190.97
144	658280.3091	582166.8998	190.88
145	658258.7451	582162.2301	190.75
146	658269.8630	582232.7168	189.27
147	658262.5263	582220.5223	189.27
148	658270.0881	582201.2350	190.30
149	658249.3104	582193.9241	190.05
150	658270.0881	582239.5226	188.62
151	658265.1880	582246.9341	188.50
152	658275.3063	582280.2401	188.11

POINT NO.	NORTHING	EASTING	ELEVATION
153	658260.5576	582280.0445	187.89
154	658247.3029	582248.5842	188.59
155	658239.9321	582214.2998	188.83
156	658238.8053	582216.7110	188.71
157	658233.6652	582213.0759	188.47
158	658241.3735	582211.9060	189.00
159	658242.2259	582196.4287	188.28
160	658212.3167	582178.4188	188.28
161	658177.5741	582236.1165	188.04
162	658247.4583	582278.0474	188.04
163	658249.3834	582284.1659	188.10
164	658253.2954	582286.5455	188.15

POINT NO.	NORTHING	EASTING	ELEVATION
165	658241.4030	582200.2257	188.32
166	658218.2726	582186.2978	188.32
167	658210.5349	582199.1480	188.47
168	658206.4173	582200.1705	188.50
169	658203.8473	582198.6229	188.50
170	658191.4669	582219.1832	188.26
171	658194.0369	582220.7308	188.26
172	658195.0594	582224.8484	188.23
173	658187.3217	582237.6986	188.08
174	658236.1525	582267.1019	188.38

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
FARM LANE AND PAPER MILL PARKING LOTS  
LAYOUT PLAN**

DESIGNED BY: RKK

DRAWN BY: RKK

BUILDING NO.: N/A

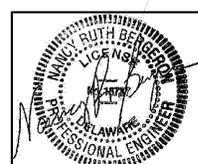
DATE: 4/28/2017

SCALE: 1" = 10'

SHEET NO.: **C-9**

PARKS PROJECT #: NVF-4

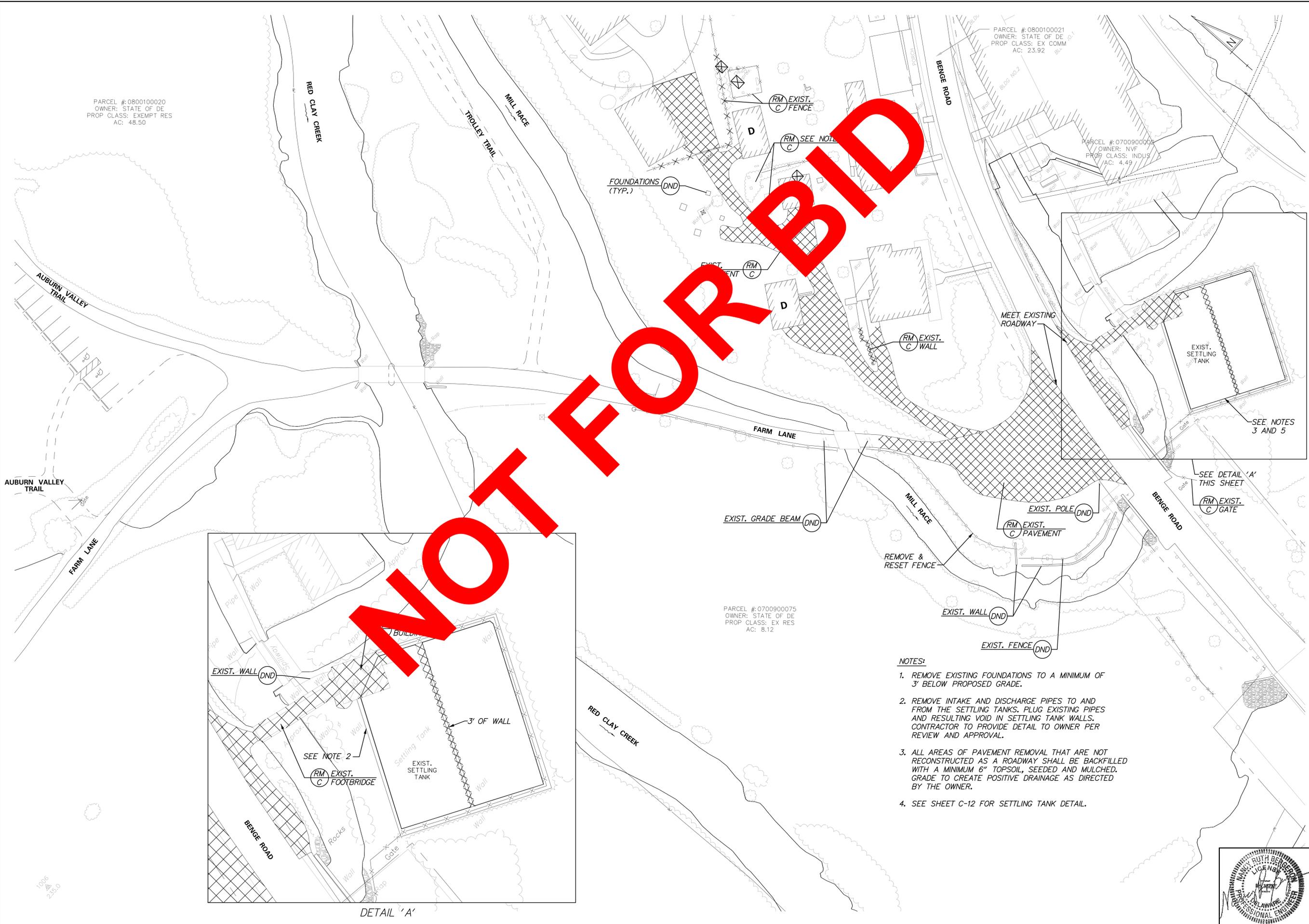
CONTRACT #: 2015-NVF-100



NOTE: ALL ROADWAYS BEYOND THE RIGHT-OF-WAY ARE PRIVATELY MAINTAINED



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PARCEL #: 0800100020  
OWNER: STATE OF DE  
PROP CLASS: EXEMPT RES  
AC: 48.50

PARCEL #: 0800100021  
OWNER: STATE OF DE  
PROP CLASS: EX COMM  
AC: 23.92

PARCEL #: 0700900075  
OWNER: NVF  
PROP CLASS: INDUS  
AC: 4.49

PARCEL #: 0700900075  
OWNER: STATE OF DE  
PROP CLASS: EX RES  
AC: 8.12



DETAIL 'A'

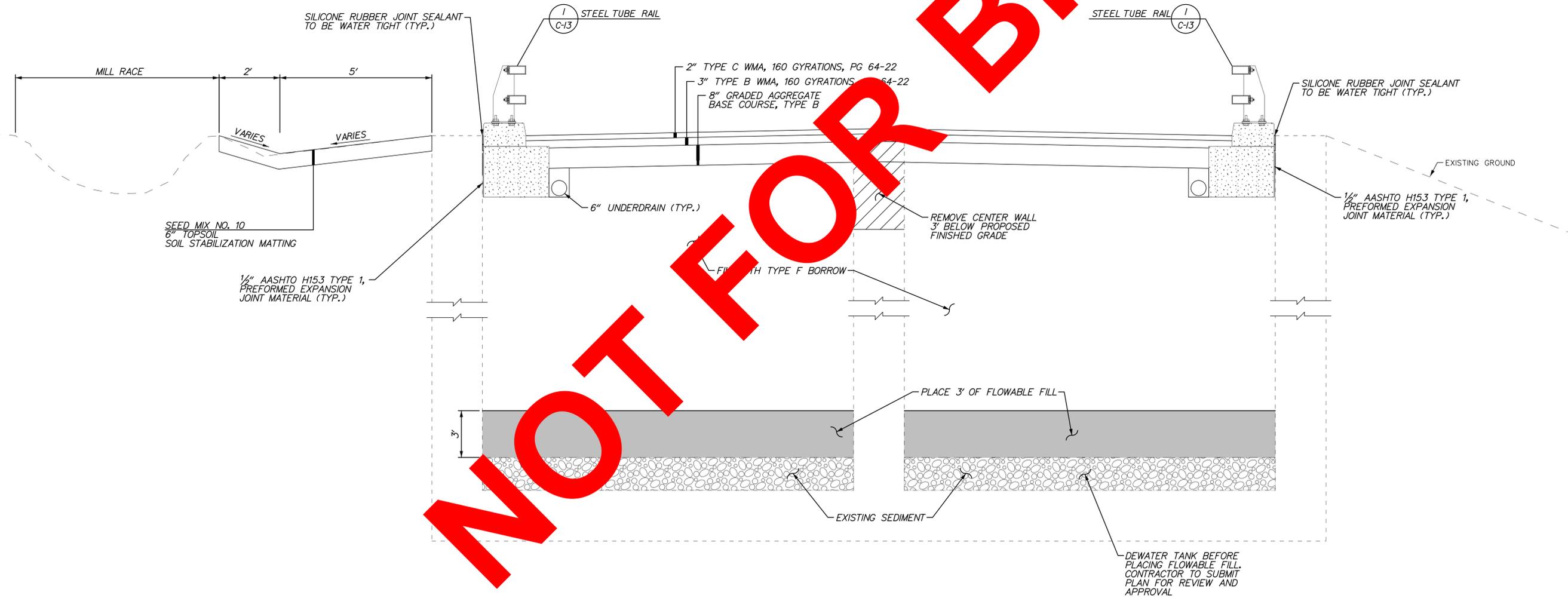
**NOTES:**

1. REMOVE EXISTING FOUNDATIONS TO A MINIMUM OF 3' BELOW PROPOSED GRADE.
2. REMOVE INTAKE AND DISCHARGE PIPES TO AND FROM THE SETTLING TANKS. PLUG EXISTING PIPES AND RESULTING VOID IN SETTLING TANK WALLS. CONTRACTOR TO PROVIDE DETAIL TO OWNER PER REVIEW AND APPROVAL.
3. ALL AREAS OF PAVEMENT REMOVAL THAT ARE NOT RECONSTRUCTED AS A ROADWAY SHALL BE BACKFILLED WITH A MINIMUM 6" TOPSOIL, SEEDED AND MULCHED. GRADE TO CREATE POSITIVE DRAINAGE AS DIRECTED BY THE OWNER.
4. SEE SHEET C-12 FOR SETTLING TANK DETAIL.



BY:	
DATE:	DESCRIPTION:
AUBURN HEIGHTS PRESERVE PAPER MILL BRIDGE	
DEMOLITION PLAN	
	
DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	1" = 30'
SHEET NO.:	C-11
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100

2/27/2017 3:08:31 PM \\BALSRV01\2014\2014\14078\_DNREC\TASK 10 - MB\_NVF\CADD\CONTRACTS\FARMLN\_PAPERMILL\PLANS\CP05\_AHP.DGN

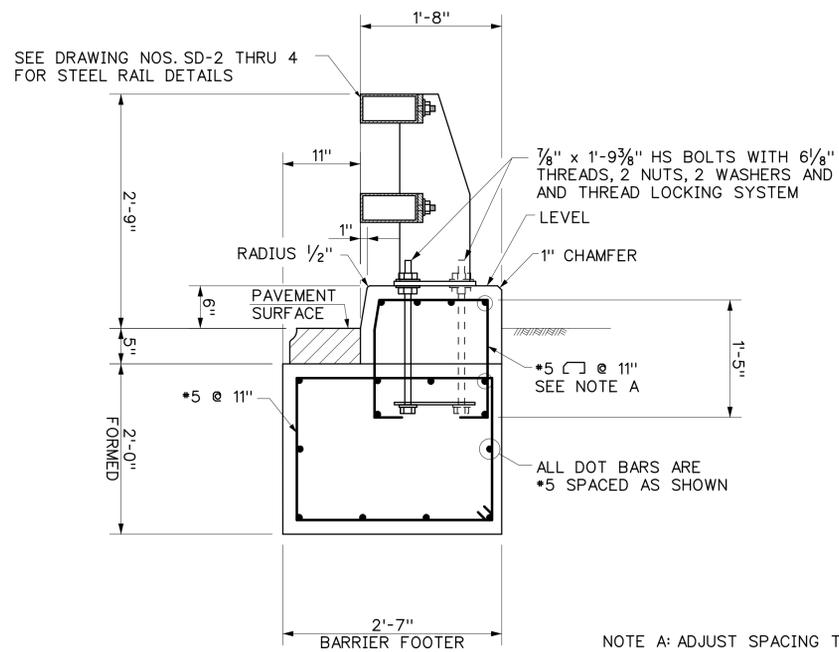


NOT FOR BID

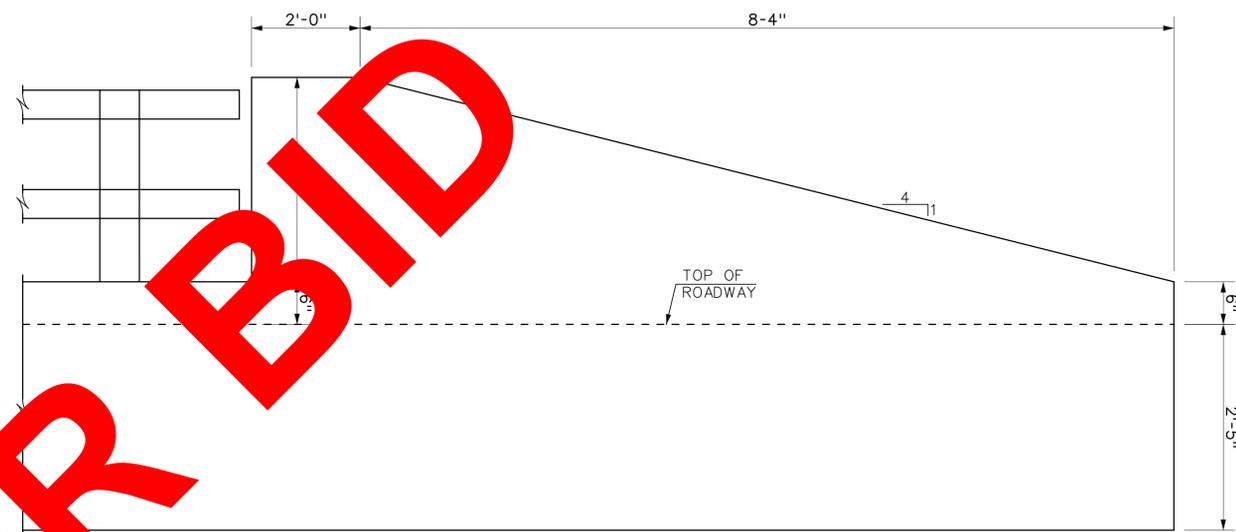
1  
C-12 SETTLING TANK  
PAPER MILL PARKING LOT  
SCALE: N.T.S.



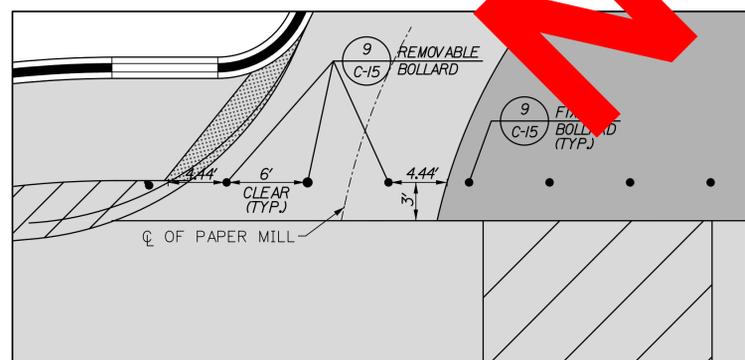
DATE:	DESCRIPTION:	BY:
DATE:	DESCRIPTION:	BY:
AUBURN HEIGHTS PRESERVE PAPER MILL BRIDGE		
SETTLING TANK DETAIL		
		
DESIGNED BY:	RKK	
DRAWN BY:	RKK	
BUILDING NO.:	N/A	
DATE:	4/28/2017	
SCALE:	AS SHOWN	
SHEET NO.:	C-12	
PARKS PROJECT #:	NVF-4	
CONTRACT #:	2015-NVF-100	



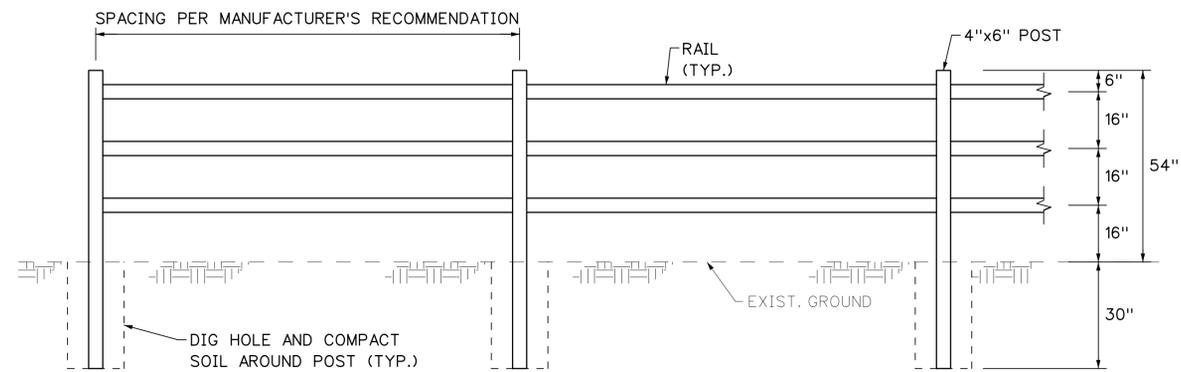
1 STEEL TUBE RAIL  
C-13 SCALE: 1"=1'-0"



2 STEEL TUBE RAIL END TAPER  
C-13 N.T.S.



3 BOLLARD SPACING DETAIL  
C-13 SCALE: NOT TO SCALE



SPLIT RAIL FENCE NOTES:

1. SPLIT RAIL FENCE SHALL BE A 3 RAIL SYSTEM.
2. ALL WOOD SHALL BE PRESSURE TREATED WOOD WITH ACQ TREATMENT:
  - POST SHALL HAVE A MINIMUM RETENTION OF 0.40 PCF
  - RAIL SHALL HAVE A MINIMUM RETENTION OF 0.25 PCF
3. POST DIMENSIONS SHALL BE APPROXIMATELY 4"x6"x84".
4. RAILS SHALL BE TRIANGULAR WITH AN AVERAGE GIRTH OF 12-13".
5. POSTS SHALL BE EMBEDDED 30". THE HOLE SHALL BE BACKFILLED WITH THE ORIGINAL SOIL AND FIRMLY COMPACTED AROUND THE POST.

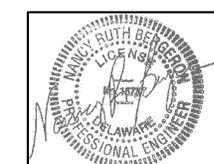
4 SPLIT RAIL FENCE  
C-13 SCALE: NOT TO SCALE

BY:	
DATE:	
DESCRIPTION:	

AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
CONSTRUCTION DETAILS



DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	N.T.S.
SHEET NO.:	C-13
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100

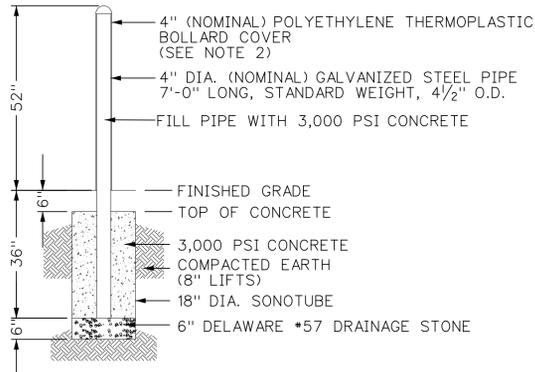


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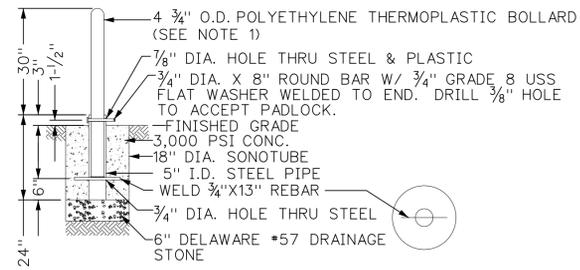


**BOLLARD NOTES:**

1. REMOVABLE BOLLARD IS MODEL NUMBER BPD-YL-3/2-52-S BY BOLLARDS N SLEEVES (1-800-914-4771), OR APPROVED EQUAL. CUT TO HEIGHT DIMENSION AS SHOWN. SUBMIT MANUFACTURER'S STANDARD COLORS FOR SELECTION BY OWNER. THERE SHALL BE NO STEEL PIPE INSIDE THE PLASTIC REMOVABLE BOLLARD.
2. FIXED BOLLARD COVER IS MODEL NUMBER BPD-YL-4-52-S BY BOLLARDS N SLEEVES (1-800-914-4771), OR APPROVED EQUAL. SUBMIT MANUFACTURER'S STANDARD COLORS FOR SELECTION BY OWNER.
3. FIXED BOLLARD COVER SHALL BE INSTALLED BY SLIDING OVER AND ATTACHING TO STEEL PIPE UTILIZING 2-SIDED TAPE PROVIDED BY THE BOLLARD COVER MANUFACTURER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. TAPE SHALL BE WRAPPED AROUND THE CIRCUMFERENCE OF THE STEEL PIPE AT THREE LOCATIONS: AT TOP JUST BELOW DOME, IN MIDDLE, AND AT BOTTOM.
4. ALL STEEL SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

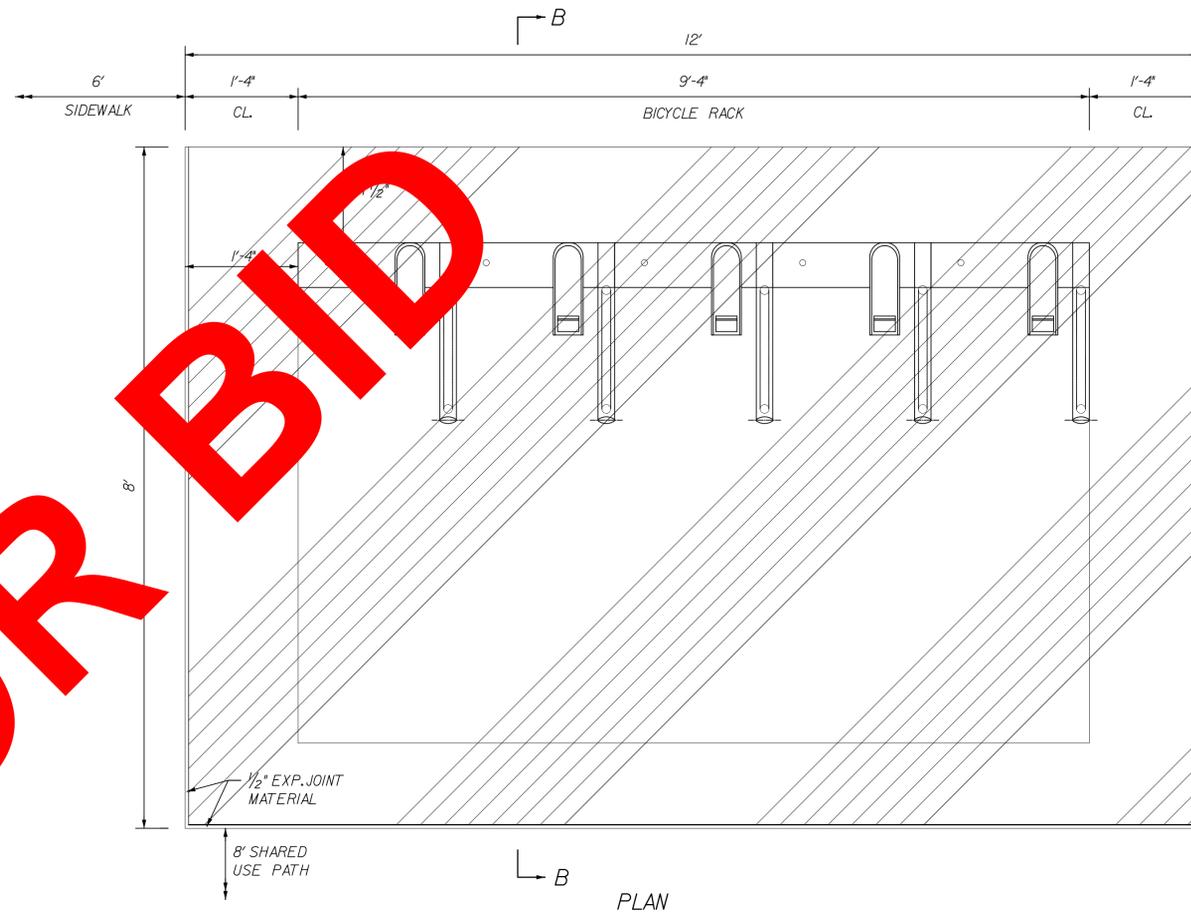


SECTION  
FIXED BOLLARD

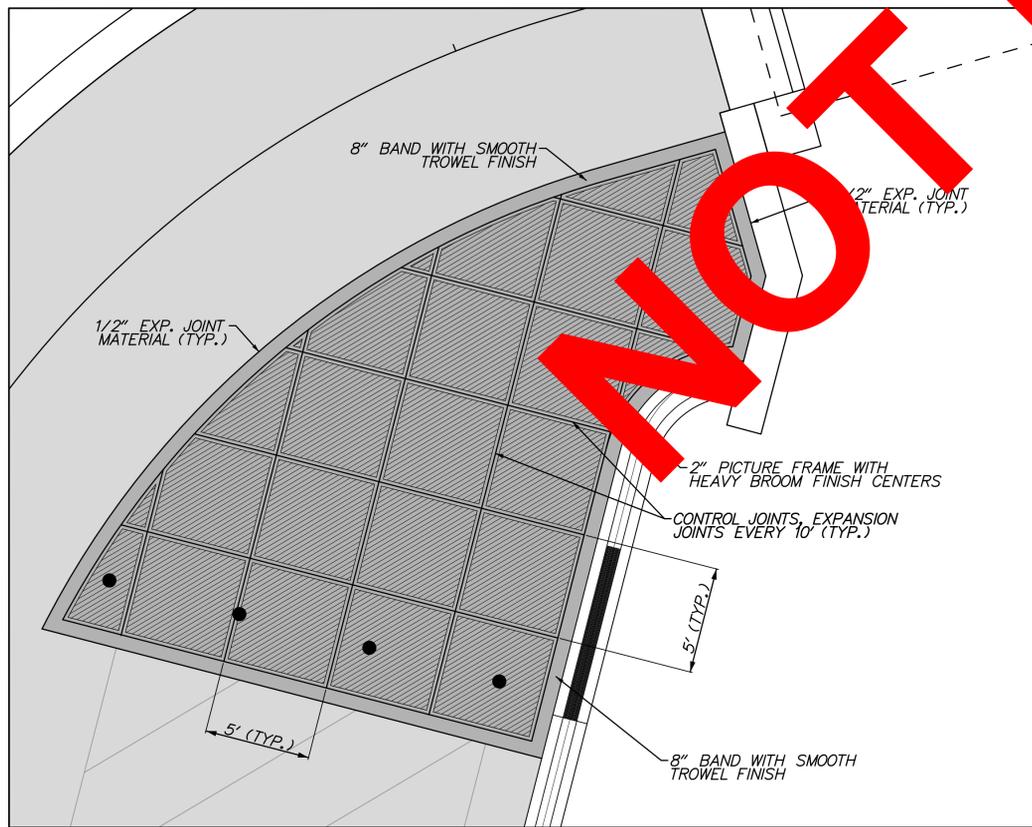


SECTION  
REMOVABLE BOLLARD

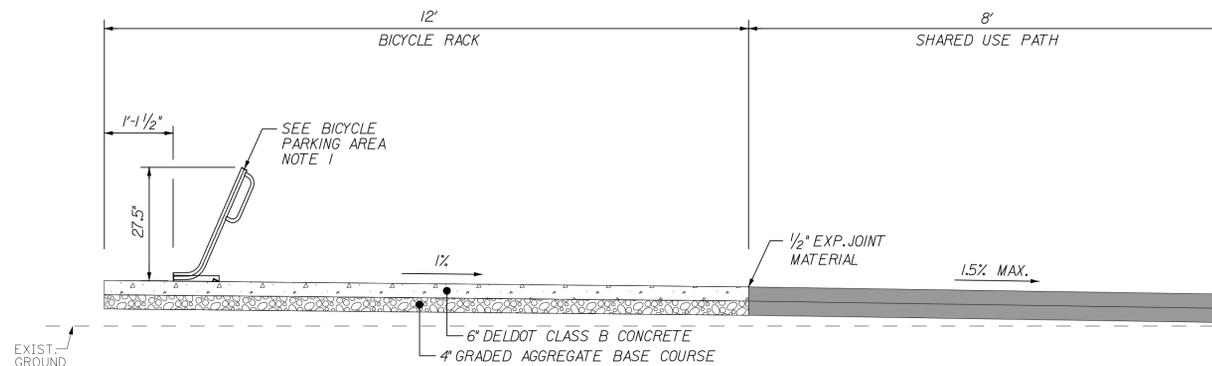
9 BOLLARD DETAILS  
C-15 SCALE: 1"=1'



PLAN



10 PAVEMENT SCORING DETAIL  
C-15 SCALE: 1"=4'

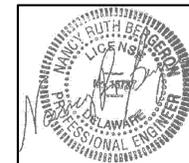


SECTION B-B

11 BICYCLE PAD WITH RACK  
C-15 SCALE: N.T.S.

**BICYCLE PARKING AREA NOTES:**

1. BIKE RACK SHALL BE LIGHTNING BOLT LR SERIES, MODEL \* LR-P5, FIVE-POST BIKE RACK, PERMANENT SURFACE MOUNT. FINISH AND COLOR TO BE DETERMINED BY OWNER. MANUFACTURED BY CREATIVE PIPE, INC. TELEPHONE: 800-644-8467, OR APPROVED EQUAL.
2. CONCRETE SHALL BE DELDOT CLASS B.



BY:	
DESCRIPTION:	
DATE:	
DESCRIPTION:	
AUBURN HEIGHTS PRESERVE PAPER MILL BRIDGE	
CONSTRUCTION DETAILS	
DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	N.T.S.
SHEET NO.:	C-15
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100

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PAVEMENT MARKINGS LEGEND	
SYMBOL	ITEM
(A)	5" SOLID WHITE EPOXY RESIN PAVEMENT STRIPING (ITEM 748506)
(B)	16" SOLID WHITE ALKYD THERMOPLASTIC PAVEMENT STRIPING (ITEM 748015)
(C)	24" SOLID WHITE ALKYD THERMOPLASTIC PAVEMENT STRIPING (ITEM 748015)
(D)	5" SOLID BLUE EPOXY RESIN PAVEMENT STRIPING
(E)	5"-6"-5" SOLID DOUBLE YELLOW EPOXY RESIN PAVEMENT STRIPING (ITEM 748506)

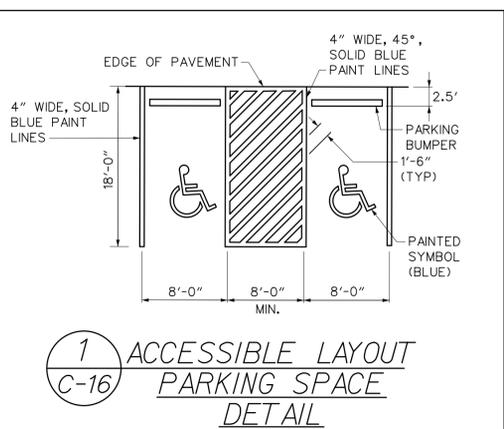
**NOTE:**  
 1. SIGN SHALL BE MOUNTED AT A MINIMUM OF 84" ABOVE PAVEMENT ELEVATION IN ACCORDANCE WITH DELAWARE MUTCD.  
 2. SIGNS SHALL BE INSTALLED ON BREAKAWAY POSTS IN ACCORDANCE WITH DELDOT STANDARD DETAIL T-15.



PARCEL #: 0700900075  
 OWNER: STATE OF DE  
 PROP CLASS: EX RES  
 AC: 8.12

PARCEL #: 0800100021  
 OWNER: STATE OF DE  
 PROP CLASS: EX COMM  
 AC: 23.92

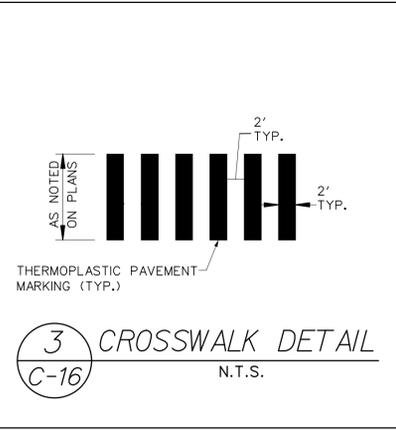
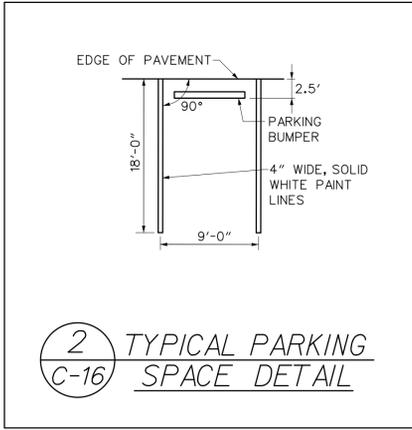
PARCEL #: 0700900002  
 OWNER: NVF  
 PROP CLASS: INDUS  
 AC: 4.49



**MEET EXISTING ROADWAY**

SIGN LEGEND		
① STOP R1-1 (36" X 36")	④ STOP SR1-16-DE (24" X 42")	⑦ TRAIL X-ING W11-15P (24" X 18")
② ONE LANE BRIDGE W5-3 (30" X 30")	⑤* RESERVED PARKING R7-8 (12" X 18")	⑧ AHEAD W16-9P (24" X 12")
③ BICYCLE W11-10P (24" X 18")	⑥* VAN ACCESSIBLE R7-8P (12" X 6")	⑨ W16-7P (24" X 12")

\* ALL ACCESSIBLE SIGNS SHALL BE 60" MINIMUM ABOVE THE GROUND SURFACE MEASURED TO THE BOTTOM OF THE SIGN



BY: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

DATE: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

**AUBURN HEIGHTS PRESERVE PAPER MILL BRIDGE**

**SIGNING AND STRIPING PLAN**

DESIGNED BY: RKK

DRAWN BY: RKK

BUILDING NO.: N/A

DATE: \_\_\_\_\_

SCALE: 1" = 20'

SHEET NO.: **C-16**

PARKS PROJECT #: NVF-4

CONTRACT #: 2015-NVF-100

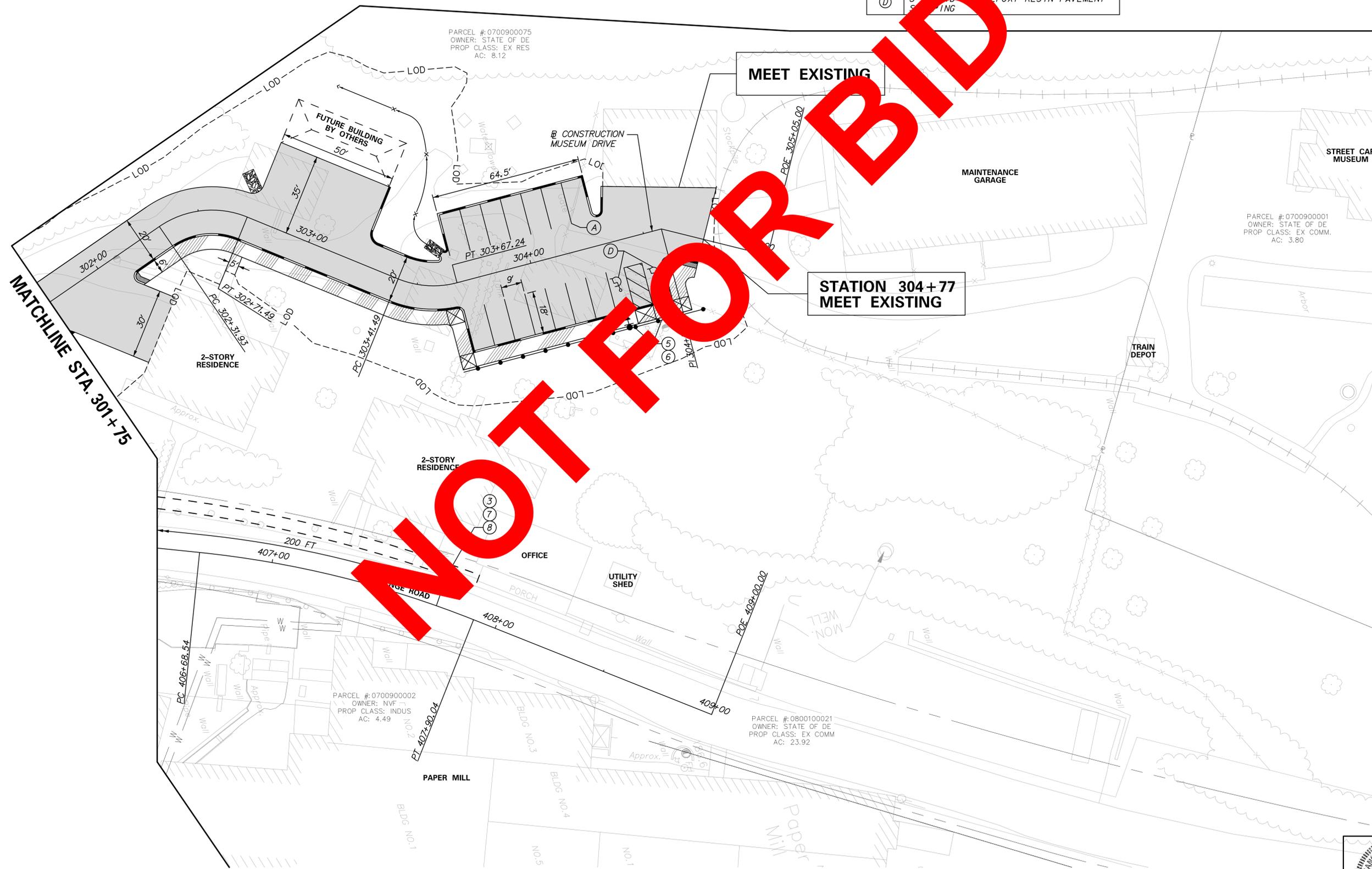
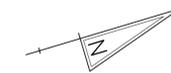
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**NOTES:**

1. SIGNS SHALL BE INSTALLED ON BREAKAWAY POSTS IN ACCORDANCE WITH DELDOT STANDARD DETAIL T-15.
2. SEE SHEET C-16 FOR PAVEMENT MARKING DETAILS AND SIGN LEGEND.
3. SIGN TO BE PLACED 200 FT FROM SIGN LOCATED AT STA. 405+72 LT.

PAVEMENT MARKINGS LEGEND	
SYMBOL	ITEM
(A)	5" SOLID WHITE EPOXY RESIN PAVEMENT STRIPING (ITEM 748506)
(B)	16" SOLID WHITE ALKYD THERMOPLASTIC PAVEMENT STRIPING (ITEM 748015)
(C)	24" SOLID WHITE ALKYD THERMOPLASTIC PAVEMENT STRIPING (ITEM 748015)
(D)	5" SOLID WHITE EPOXY RESIN PAVEMENT STRIPING

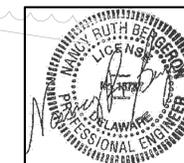


BY:	
DATE:	
DESCRIPTION:	

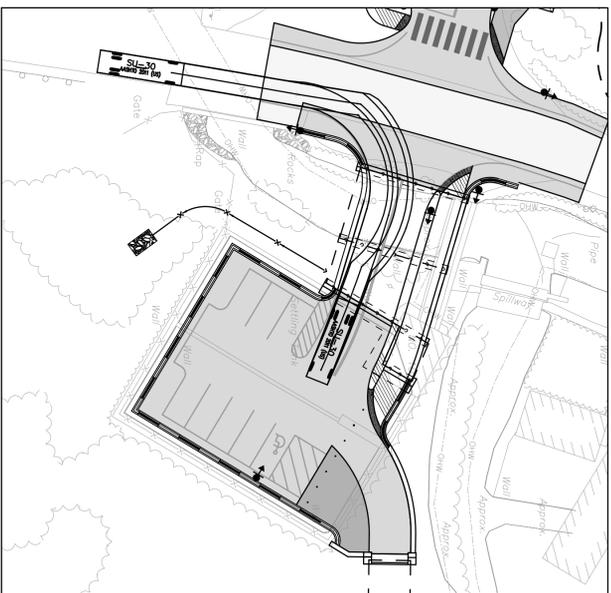
**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
SIGNING AND STRIPING PLAN**



DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	1" = 20'
SHEET NO.:	<b>C-17</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



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TURNING MOVEMENT DIAGRAM  
SU-30 DESIGN VEHICLE  
SCALE: 1" = 30'

PARCEL #: 070090002  
OWNER: NVF  
PROP CLASS: INDUS  
AC: 4.49

PARCEL #: 0800100021  
OWNER: STATE OF DE  
PROP CLASS: EX\_COMM  
AC: 23.92

PARCEL #: 0700900075  
OWNER: STATE OF DE  
PROP CLASS: EX RES  
AC: 8.12

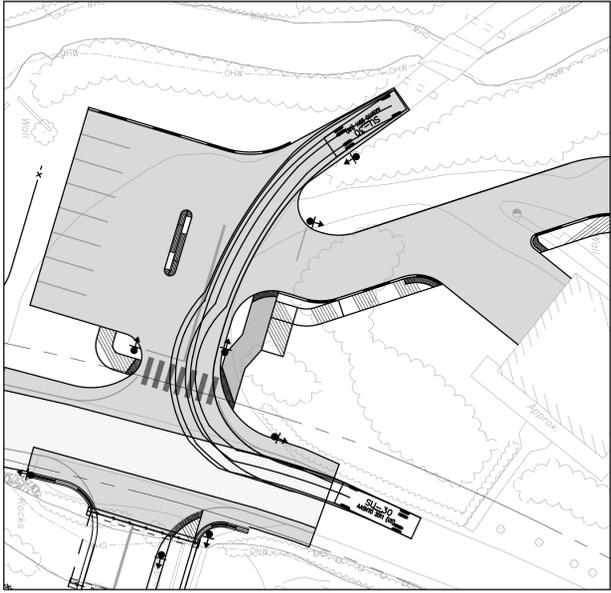
SIGHT DISTANCE TRIANGLE  
309 FT ALONG CENTERLINE  
OF NORTHBOUND LANE

SIGHT DISTANCE TRIANGLE  
375 FT ALONG CENTERLINE  
OF SOUTHBOUND LANE

NOTE:  
1. THERE ARE NO ADJACENT ROADWAYS ENTERING BENG ROAD  
WITHIN 300 FEET OF THE PROPOSED FARM LANE ENTRANCE.

DATE:	DESCRIPTION:	BY:
DATE:	DESCRIPTION:	BY:
AUBURN HEIGHTS PRESERVE PAPER MILL BRIDGE ENTRANCE PLAN		
		
DESIGNED BY:	RKK	
DRAWN BY:	RKK	
BUILDING NO.:	N/A	
DATE:	4/28/2017	
SCALE:	1" = 30'	
SHEET NO.:	C-18	
PARKS PROJECT #:	NVF-4	
CONTRACT #:	2015-NVF-100	

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TURNING MOVEMENT DIAGRAM  
SU-30 DESIGN VEHICLE  
SCALE: 1" = 30'

NOTE:  
1. THERE ARE NO ADJACENT ROADWAYS ENTERING BENG ROAD WITHIN 300 FEET OF THE PROPOSED FARM LANE ENTRANCE.

DATE:	DESCRIPTION:	BY:
DATE:	DESCRIPTION:	BY:
<b>AUBURN HEIGHTS PRESERVE PAPER MILL BRIDGE ENTRANCE PLAN</b>		
		
DESIGNED BY:	RKK	
DRAWN BY:	RKK	
BUILDING NO.:	N/A	
DATE:	4/28/2017	
SCALE:	1" = 30'	
SHEET NO.:	<b>C-19</b>	
PARKS PROJECT #:	NVF-4	
CONTRACT #:	2015-NVF-100	

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PARCEL #: 0700900001  
OWNER: STATE OF DE  
PROP CLASS: EX COMM.  
AC: 3.80

PARCEL #: 0800100021  
OWNER: STATE OF DE  
PROP CLASS: EX COMM.  
AC: 48.50

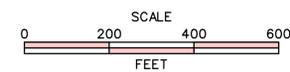
ALTERNATE 1

PARCEL #: 0700900075  
OWNER: STATE OF DE  
PROP CLASS: EX RES  
AC: 8.12

PARCEL #: 0800100021  
OWNER: STATE OF DELAWARE  
PROP CLASS: INDUS  
AC: 23.92

BASE BID

PARCEL #: 0700900002  
OWNER: NVF  
PROP CLASS: INDUS  
AC: 4.49



DATE:	DESCRIPTION:	BY:

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
OVERALL CONSTRUCTION PLAN**



DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	1" = 200'
SHEET NO.:	<b>C-20</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100

**EROSION AND SEDIMENT CONTROL NOTES**

1. NOTIFY THE DNREC SEDIMENT AND STORMWATER MANAGEMENT PROGRAM IN WRITING AT LEAST FIVE (5) DAYS PRIOR TO THE START OF CONSTRUCTION. FAILURE TO DO SO CONSTITUTES A VIOLATION OF THE APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLAN.
2. REVIEW AND APPROVAL OF THE SEDIMENT AND STORMWATER MANAGEMENT PLAN SHALL NOT RELIEVE THE CONTRACTOR FROM HIS OR HER RESPONSIBILITIES FOR COMPLIANCE WITH THE REQUIREMENTS OF THE SEDIMENT AND STORMWATER MANAGEMENT REGULATIONS, NOR SHALL IT RELIEVE THE CONTRACTOR FROM ERRORS OR OMISSIONS IN THE APPROVED PLAN.
3. IF THE APPROVED PLAN NEEDS TO BE MODIFIED, ADDITIONAL SEDIMENT AND STORMWATER MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY DNREC.
4. FOLLOWING SOIL DISTURBANCE OR REDISTURBANCE OF THE STAGING AREA, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN FOURTEEN (14) CALENDAR DAY AS TO THE SURFACE OF ALL PERIMETER SEDIMENT CONTROLS AND SOIL STOCKPILES.
5. UPON COMPLETION OF CONSTRUCTION AND APPROVAL BY DNREC'S SEDIMENT & STORMWATER PROGRAM, THE OWNER SHALL BE RESPONSIBLE FOR FUTURE MAINTENANCE OF THE PERMANENT STORMWATER MANAGEMENT FACILITIES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR OF ALL EROSION AND SEDIMENT CONTROL DEVICES AND STORMWATER MANAGEMENT PRACTICES DURING ALL CONSTRUCTION ACTIVITIES.
7. DUST IS TO BE CONTROLLED EXCLUSIVELY THROUGH THE USE OF WATER. COSTS ASSOCIATED WITH THE FURNISHING AND APPLICATION OF WATER FOR DUST CONTROL SHALL BE INCLUDED IN THE BID.
8. IT IS INTENDED THAT MUD TRACKING BE ELIMINATED ON ALL ROADWAYS AND PARKING LOTS ADJOINING THE PROJECT. EACH POINT OF INGRESS AND EGRESS FROM THE PROJECT SHALL HAVE INSTALLED A STABILIZED CONSTRUCTION ENTRANCE (SCE). ALL PAVED SURFACES ADJOINING THE PROJECT LIMITS SHALL BE LEFT IN A BROOM CLEAN CONDITION AT THE END OF EACH WORKDAY.
9. STABILIZED CONSTRUCTION ENTRANCES SHALL BE TOP DRESSED WITH TWO (2) INCHES OF CLEAN DE NO. STONES WHEN THE VOIDS BECOME CLOGGED OR AS DIRECTED BY THE OWNER. IN THE EVENT THAT IT IS DETERMINED THAT VEHICLES ARE TRANSPORTING SEDIMENT FROM THE SITE, A WHEEL WASH SHALL BE INSTALLED TO CLEAN VEHICLES PRIOR TO THEIR EGRESS FROM THE SITE AT NO ADDITIONAL COST. THIS DETERMINATION SHALL BE MADE BY THE ON SITE CERTIFIED CONSTRUCTION REVIEWER (CCR) AND/OR BY THE OWNER.
10. PRIOR TO ANY CLEARING, INSTALLATION OF SEDIMENT CONTROL MEASURES, OR GRADING, THE CONTRACTOR SHALL SCHEDULE AND CONDUCT A PRE-CONSTRUCTION MEETING WITH THE AGENCY CONSTRUCTION SITE REVIEWER, THE LANDOWNER/DEVELOPER REPRESENTATIVE, SITE CONTRACTOR, AND A CERTIFIED CONSTRUCTION REVIEWER ARE REQUIRED TO BE IN ATTENDANCE AT THE PRE-CONSTRUCTION MEETING; THE SITE DESIGNER IS RECOMMENDED TO ATTEND.
11. THE CONTRACTOR SHALL AT ALL TIMES PROTECT AGAINST SEDIMENT OR DEBRIS LADEN RUNOFF OR WIND FROM LEAVING THE SITE. PERIMETER CONTROLS SHOULD BE CHECKED DAILY AND ADJUSTED AND/OR REPAIRED TO FULLY CONTAIN AND CONTROL SEDIMENTATION ON THE SITE. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED HALF OF THE EFFECTIVE CAPACITY OF THE CONTROL. IN ADDITION, THE CONTRACTOR MAY NEED TO ADJUST OR REPAIR MEASURES IN TIMES OF ADVERSE WEATHER CONDITIONS, AS NEEDED OR AS DIRECTED BY THE AGENCY CONSTRUCTION SITE REVIEWER.
12. THE CONTRACTOR SHALL NOTIFY THE PERSON RESPONSIBLE FOR STORMWATER SYSTEM CONSTRUCTION REVIEW AT LEAST THREE (3) DAYS PRIOR TO THE START OF THE STORMWATER SYSTEM CONSTRUCTION; STORMWATER FACILITIES MUST BE REVIEWED THROUGHOUT THEIR CONSTRUCTION.
13. STOCKPILE TOPSOIL AND EXCAVATED SUBSOILS. STOCKPILES SHALL BE SURROUNDED WITH A PERIMETER CONTROL, LOCATED ON LAND WITH SLIGHT TO NO SLOPE, AND STABILIZED ONCE INACTIVE.
14. SOILS WITHIN THE PROJECT AREA CONSIST OF: HATBORO-CODORUS COMPLEX (Hw), HYDROLOGIC SOIL GROUP B/D AND DELANCO-CODORUS-HATBORO COMPLEX (D&B), HYDROLOGIC SOIL GROUP C-4 THROUGH C-5.
15. TOTAL DISTURBED AREA: 2.28 ACRES. TOTAL VOLUME OF SPOILS: APPROX. 3,000 C.Y. FOR THE COMPLETE LIMIT OF DISTURBANCE AREA, REFER TO THE CONSTRUCTION PHASING SHEETS C-4 THROUGH C-5.
16. FOR EROSION AND SEDIMENT CONTROLS, SEE SHEETS ES-2 THROUGH ES-3.
17. ALL PERIMETER CONTROLS ARE TO BE REVIEWED BY THE AGENCY CONSTRUCTION SITE REVIEWER AND APPROVED PRIOR TO PROCEEDING WITH FURTHER SITE DISTURBANCE OR CONSTRUCTION.
18. EROSION AND SEDIMENT CONTROL DEVICES SHOULD BE REMOVED ONLY AFTER WORK IN AN AREA HAS BEEN COMPLETED AND STABILIZED, WITH WRITTEN APPROVAL FROM THE AGENCY CONSTRUCTION SITE REVIEWER.
19. PRIOR TO COMMENCING A NEW PHASE OF CONSTRUCTION, THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE AGENCY CONSTRUCTION SITE REVIEWER THAT THE PREVIOUS PHASE HAS BEEN SUFFICIENTLY STABILIZED.
20. THE TERMINATION OF THE CONSTRUCTION GENERAL PERMIT WILL REQUIRE SUBMISSION AND ACCEPTANCE OF THE POST CONSTRUCTION VERIFICATION DOCUMENTS, INCLUDING FINAL STABILIZATION THROUGHOUT THE SITE, ALL ELEMENTS OF THE SEDIMENT AND STORMWATER MANAGEMENT PLAN IMPLEMENTED, AND ACCEPTANCE OF THE FINAL OPERATION AND MAINTENANCE PLAN.

**CONSTRUCTION PHASING PROJECT NOTES**

ACCESS THROUGH THE CONSTRUCTION SITE

THE CONTRACTOR SHALL MAINTAIN ACCESS TO THE EXISTING RESIDENCES ON FARM LANE AT ALL TIMES THROUGHOUT THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS THROUGH THE WORK ZONE DURING EACH PHASE OF CONSTRUCTION. THE PROJECT SITE SHALL BE CLOSED TO PEDESTRIANS THROUGHOUT THE LIFE OF THE PROJECT.

WORK AREA ADJACENT TO BERGE ROAD

WHEN WORKING ADJACENT TO BERGE ROAD THE CONTRACTOR SHALL UTILIZE FLAGGERS IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) TA 10. THE CONTRACTOR SHALL EXCAVATE ONLY AS MUCH AS CAN BE CONSTRUCTED TO THE GABC COURSE AT THE END OF EACH WORK DAY. LONGITUDINAL DROP OFFS SHALL BE CORRECTED AT THE END OF EACH WORK DAY IN ACCORDANCE WITH TABLE 6G-1 OF THE DELAWARE MUTCD.

BRIDGE INSTALLATION - WORKIN BRIDGES

THE CONTRACTOR SHALL NOTE THAT FURNISHING AND INSTALLING PAPER MILL BRIDGE OVER RED CLAY CREEK SHALL BE BY WORKIN BRIDGES. THIS IS A SEPARATE CONTRACT AND IS NOT INCLUDED IN THIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF THE ABUTMENTS AND SCOUR PROTECTION FOR THE NEW STRUCTURE AS SHOWN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ANTICIPATE AND INCURE AN UNINTERRUPTED 45 CALENDAR DAY PERIOD FOR THE INSTALLATION OF THE BRIDGE. THE CONTRACTOR SHALL PROVIDE A MINIMUM 30 DAY NOTICE TO WORKIN BRIDGES AND THE OWNER AS TO THE EXACT DATE WHEN THE ABUTMENTS AND WORKING BRIDGES SHALL BE AVAILABLE FOR THE INSTALLATION OF THE BRIDGE. THE CONTRACTOR SHALL MAINTAIN ONGOING CONSTRUCTION ACTIVITIES WITH WORKIN BRIDGES SUCH AS TO NOT INTERRUPT DELAY THE INSTALLATION OF THE BRIDGE. ACCESS TO THE BRIDGE CONSTRUCTION STAGING SHALL BE MAINTAINED AT ALL TIMES.

CONTACT INFORMATION:

WORKIN BRIDGES - JULIE BOWERS 641.260.1262 JBOWERS@MAIL.COM  
BACH STEEL - NELS RAYNOR 517.581.6211 NRAYNOR@BACHSTEEL.COM

STAGING / STOCKPILE AREAS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION, MAINTENANCE AND REPAIR/REPLACEMENT OF ALL EROSION AND SEDIMENT CONTROL DEVICES REQUIRED FOR THE INSTALLATION OF THE BRIDGES INCLUDING THE STAGING AREA SHOWN ON THE PLANS AS WORKIN BRIDGES' CONSTRUCTION STAGING AREA. THE COST ASSOCIATED WITH THE INSTALLATION, MAINTENANCE AND REPAIR/REPLACEMENT OF THESE DEVICES SHALL BE INCLUDED IN THE CONTRACTOR'S LUMP SUM BID. NO ADDITIONAL PAYMENT SHALL BE MADE BY THE OWNER. THE CONTRACTOR SHALL BE REQUIRED TO RESTORE ALL AREAS UTILIZED TO THE ORIGINAL CONDITION. THE COSTS ASSOCIATED WITH THE RESTORING THESE AREA ARE TO BE INCLUDED IN THE CONTRACTOR'S LUMP SUM BID. NO ADDITIONAL PAYMENT SHALL BE MADE BY THE OWNER.

ACCESS TO PAPER MILL BRIDGE EAST ABUTMENT

THE CONTRACTOR SHALL USE THE HIPARCEL TRAIL TO ACCESS THE STAGING AREA NEAR THE EAST ABUTMENT FOR PAPER MILL BRIDGE. THE ENTRANCE IS LOCATED OFF OF YORKLYN ROAD. UPON COMPLETION OF THE PROJECT, INCLUDING THE INSTALLATION OF THE PAPER MILL BRIDGE AND WORKIN BRIDGES, THE CONTRACTOR SHALL REDRESS THE GRADED AGGREGATE ALONG EXISTING PAVED ROAD AND PROVIDE ADDITIONAL GRADED AGGREGATE AS NECESSARY TO REMOVE ALL RUTS CREATED DURING CONSTRUCTION. ALL COSTS ASSOCIATED WITH THE REPAIRS TO THE EXISTING SHALL BE INCLUDED IN THE BASE BID.

BERGE ROAD PARKING LOT

THE CONTRACTOR SHALL NOTE THE EXISTING PARK OFFICE MAY BE UNDER RENOVATION BY OTHERS UNDER SEPARATE CONTRACT DURING THE TIME OF THIS PROJECT. THE EXISTING STONE LOT NORTH OF THE OFFICE SHALL BE USED BY OTHERS DURING THE RENOVATION AND SHALL NOT BE AVAILABLE UNTIL THE RENOVATIONS ARE COMPLETE. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF THE PROPOSED PARKING LOT IMPROVEMENTS INCLUDING THE PROPOSED SIDEWALK WITH THE CONTRACTOR OF THE RENOVATIONS AND SCHEDULE THE CONSTRUCTION OF THE IMPROVEMENTS ACCORDINGLY.

WORKING IN WATERWAYS

THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE BOG TURTLE SURVEYOR 10 DAYS IN ADVANCE OF DEWATERING THE MILL RACE.

THE CONTRACTOR SHALL MONITOR THE WATER LEVELS AND COORDINATE WITH THE BOG TURTLE SURVEYOR. THE BOG TURTLE SURVEYOR SHALL MONITOR THE MILL RACE BELOW WHERE THE SAND BAGS DIVERSION IS PLACED TO THE MILL RACE OUTFALL ONCE THE WATER LEVEL IS APPROXIMATELY THREE INCHES IN DEPTH AND EACH DAY THEREAFTER UNTIL THE MILL RACE IS COMPLETELY DRY, TO ENSURE ANY TURTLES THAT MIGHT BE IN THE DRYING MILL RACE ARE NOT EXPOSED AND CAN BE MOVED TO SAFETY.

NO EQUIPMENT SHALL BE MOVED INTO THE MILL RACE UNTIL THE BED OF THE MILL RACE IS COMPLETELY DRY, ALL SURVEYS ARE COMPLETE AND THE BOG TURTLE SURVEYOR HAS RELEASED THE AREA FOR CONSTRUCTION.

CONSTRUCTION PHASING & M.O.T	
	BARRICADE, TYPE 3
	CONCRETE SAFETY BARRIER - PORTABLE
	CONSTRUCTION WARNING SIGN LOCATION
	CONSTRUCTION WARNING SIGN
	DRUM - TRAFFIC CONTROL

EROSION & SEDIMENT CONTROL	
	STABILIZED CONSTRUCTION ENTRANCE
	SILT FENCE
	SILT FENCE - REINFORCED
	SENSITIVE AREA PROTECTION
	COMPOST FILTER LOG
	RIPRAP OUTLET PROTECTION, TYPE 1

**SUGGESTED CONSTRUCTION SEQUENCING NOTES- PHASE 1**

1. NOTIFY THE DNREC SEDIMENT AND STORMWATER MANAGEMENT PROGRAM IN WRITING AT LEAST FIVE (5) DAYS PRIOR TO THE START OF CONSTRUCTION. FAILURE TO DO SO CONSTITUTES A VIOLATION OF THE APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLAN.
2. INSTALL ADVANCED WARNING SIGNS AS SHOWN ON THE PLANS. SIGNS SHOWN ON PLAN ARE FOR WORK IN THE LOCATION OF FARM LANE AND THE PAPER MILL BRIDGE PARKING LOT. THE CONTRACTOR SHALL ADJUST SIGN LOCATIONS AS REQUIRED TO CONSTRUCT PARKING LOT IMPROVEMENTS ON BERGE ROAD NORTH OF THE OFFICE.
3. INSTALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLANS. MARK THE LIMITS OF SENSITIVE AREAS, SUCH AS PRESERVED TREES, INFILTRATION AREAS, WETLANDS, AND OTHER SECTIONS THAT ARE NOT TO BE DISTURBED WITH A PHYSICAL BARRIER.
4. ONCE THE EROSION AND SEDIMENT PERIMETER CONTROLS ARE SET, THE CONTRACTOR SHALL SCHEDULE A PERIMETER CONTROL REVIEW WITH THE AGENCY CONSTRUCTION SITE REVIEWER. ALL PERIMETER CONTROLS ARE TO BE REVIEWED BY THE AGENCY CONSTRUCTION SITE REVIEWER AND APPROVED PRIOR TO PROCEEDING WITH FURTHER SITE DISTURBANCE OR CONSTRUCTION.
5. CLEAR AND GRUB AND REMOVE DEBRIS WITHIN THE PROJECT AREA AS SHOWN ON THE PLANS.
6. UTILIZE DELAWARE MUTCD TA-10 WHILE WORKING ADJACENT TO BERGE ROAD.
7. INSTALL TEMPORARY ROAD TO ACCESS PAPER MILL WEST ABUTMENT.
8. INSTALL SUPPORT OF EXCAVATION AS REQUIRED TO CONSTRUCT THE PROPOSED BRIDGE ABUTMENTS. THE SUPPORT OF EXCAVATION SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF DELAWARE. WORKING DRAWINGS AND CALCULATIONS SHALL BE PROVIDED TO THE OWNER FOR REVIEW AND APPROVAL.
9. CONSTRUCT ABUTMENTS TO THE BEAM SEAT & CONSTRUCT WINGWALLS AS SHOWN ON PLANS.
10. REMOVE SUPPORT OF EXCAVATION.
11. INSTALL RIPRAP SCOUR PROTECTION.
12. RELEASE BRIDGE ABUTMENTS TO WORKIN BRIDGES FOR INSTALLATION OF THE BRIDGES. SEE CONSTRUCTION PHASING PROJECT NOTES THIS SHEET.
13. INSTALL SAND BAG DIVERSION AT THE HEAD OF THE MILL RACE AND DEWATER THE EXISTING MILL RACE. SEE CONSTRUCTION PHASING PROJECT- WORKING IN WATERWAYS, THIS SHEET.
14. INSTALL THE PAPER MILL DECKOVER STRUCTURE.
15. CONSTRUCT PARKING AREA OVER EXISTING SETTLING TANK TO TOP OF GABC.
16. CONSTRUCT BERGE ROAD PARKING LOT IN ACCORDANCE WITH OWNER PREPARED DRAWINGS. SEE CONSTRUCTION PHASING PROJECT NOTES- BERGE ROAD PARKING LOT, THIS SHEET.
17. CONSTRUCT PATH CONNECTION FROM OFFICE TO PROVIDE PEDESTRIAN ACCESS TO THE EXISTING RESIDENCES ALONG BERGE ROAD DURING PHASE 2 CONSTRUCTION ACTIVITIES.
18. STABILIZE WORK AREA IN ACCORDANCE WITH THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK.
19. REMOVE EROSION AND SEDIMENT CONTROL DEVICES NOT REQUIRED FOR FUTURE PHASES.

**SUGGESTED CONSTRUCTION SEQUENCING NOTES- PHASE 2**

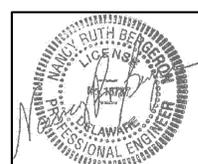
1. MAINTAIN EROSION AND SEDIMENT CONTROL DEVICES FROM PREVIOUS PHASE AND INSTALL ADDITIONAL EROSION AND SEDIMENT DEVICES REQUIRED FOR THIS PHASE.
2. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS.
3. CLOSE FARM LANE TO PUBLIC ACCESS. CLOSE MUSEUM DRIVE TO ALL TRAFFIC.
4. CONSTRUCT REMAINING PORTION OF OFFICE PATH CONNECTION. UTILIZE THE NEWLY CONSTRUCTED OFFICE PARKING LOT AND PATH FOR PEDESTRIAN ACCESS TO EXISTING RESIDENCES ALONG BERGE ROAD.
5. MAINTAIN LOCAL ACCESS TO FARM LANE AT ALL TIMES.
6. DEMO BUILDINGS AS SHOWN ON THE DEMOLITION PLAN
7. ROUGH GRADE WORK AREA.
8. INSTALL UTILITY SLEEVES TO THE FUTURE BUILDING.
9. CONSTRUCT IMPROVEMENTS AS SHOWN ON PLANS.
10. UPON COMPLETION OF BRIDGE ERECTION CONSTRUCT REMAINING BRIDGE ELEMENTS.
11. UPON COMPLETION OF REMAINING BRIDGE ELEMENTS, CONSTRUCT BOARDWALK CONNECTION TO HIPARCEL TRAIL.
12. REMOVE TEMPORARY ACCESS ROAD TO PAPER MILL WEST ABUTMENT UPON THE COMPLETION OF THE PAPER MILL BRIDGE AND RESTORE THE AREA TO IT'S ORIGINAL GRADES AND CONDITION.
13. CONSTRUCT REMAINING IMPROVEMENTS EAST OF BERGE ROAD.
14. STABILIZE WORK AREA IN ACCORDANCE WITH THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK.
15. REMOVE EROSION AND SEDIMENT CONTROL DEVICES AFTER APPROVAL BY DNREC'S SEDIMENT AND STORMWATER PROGRAM.

BY:	
DATE:	
DESCRIPTION:	

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE**  
  
**CONSTRUCTION PHASING & EROSION AND  
SEDIMENT CONTROL NOTES**



DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	NOT TO SCALE
SHEET NO.:	<b>ES-1</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



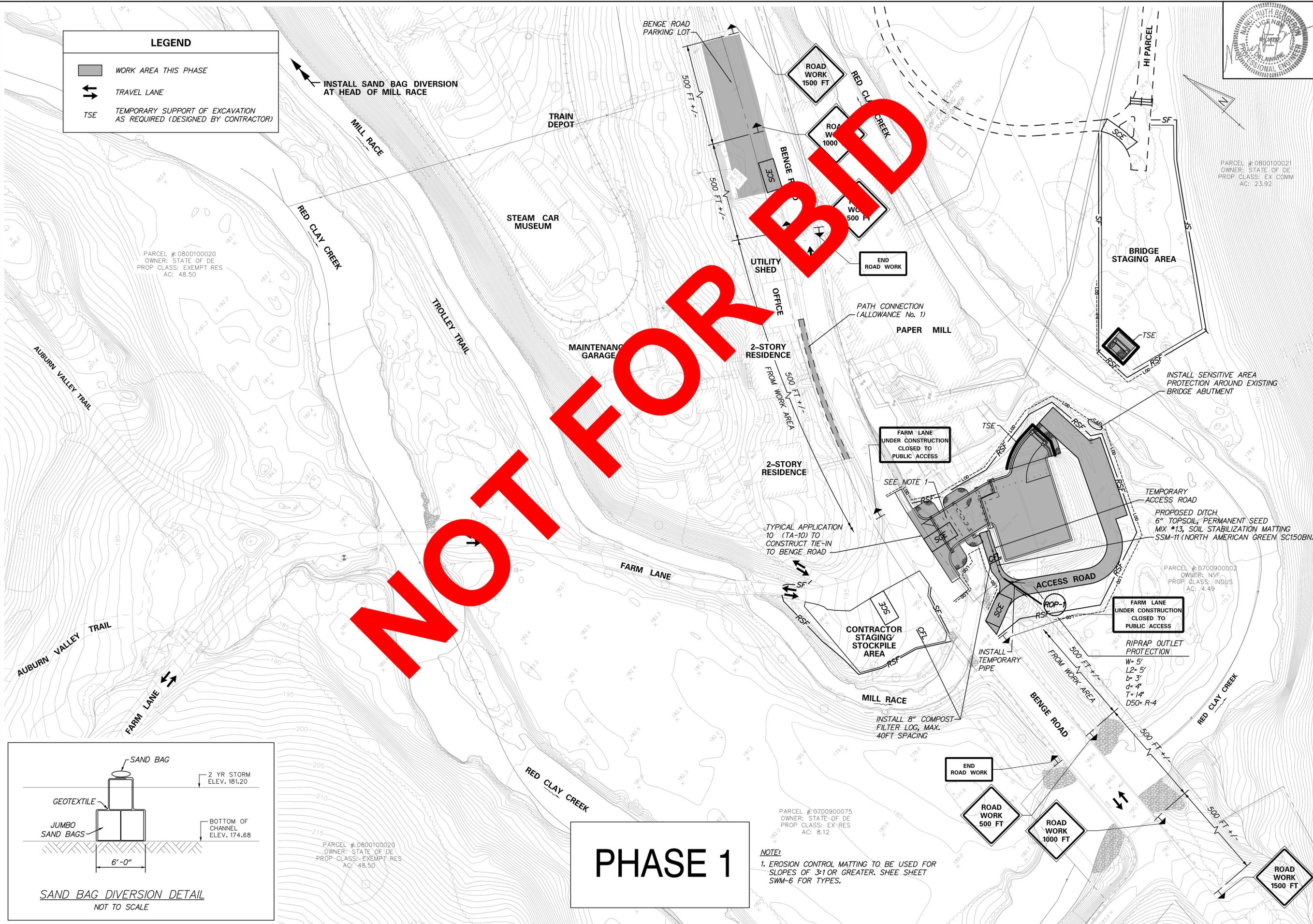
2/28/2017 9:38:16 AM \\BALSRV01\2014\2014\14078\DNREC\TASK 10 - MB\_NVF\CADD\CONTRACTS\FARMLN\_PAPERMILL\PLANS\C501\_AHP.DGN

4/17/2017 5:27:14 PM \\BALSRV01\2014\2014\14078\_DNR\CONTRACTS\FARMLN\_PAPERMILL\PLANS\CS02\_AHP.DGN

**LEGEND**

- WORK AREA THIS PHASE
- TRAVEL LANE
- TSE TEMPORARY SUPPORT OF EXCAVATION AS REQUIRED (DESIGNED BY CONTRACTOR)

INSTALL SAND BAG DIVERSION AT HEAD OF MILL RACE



PARCEL #: 0800100020  
OWNER: STATE OF DE  
PROP CLASS: EXEMPT RES  
AC: 48.50

PARCEL #: 0800100021  
OWNER: STATE OF DE  
PROP CLASS: EX COMM  
AC: 23.92

PARCEL #: 070090002  
OWNER: NVF  
PROP CLASS: INDUS  
AC: 4.49

PARCEL #: 0700900075  
OWNER: STATE OF DE  
PROP CLASS: EX RES  
AC: 8.12

PARCEL #: 0800100020  
OWNER: STATE OF DE  
PROP CLASS: EXEMPT RES  
AC: 48.50

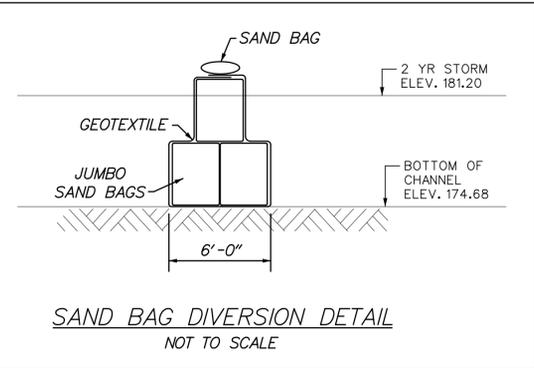


BY:	
DATE:	
DESCRIPTION:	

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
CONSTRUCTION SEQUENCING &  
EROSION AND SEDIMENT CONTROL PLANS**



DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	1" = 40'
SHEET NO.:	<b>ES-2</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



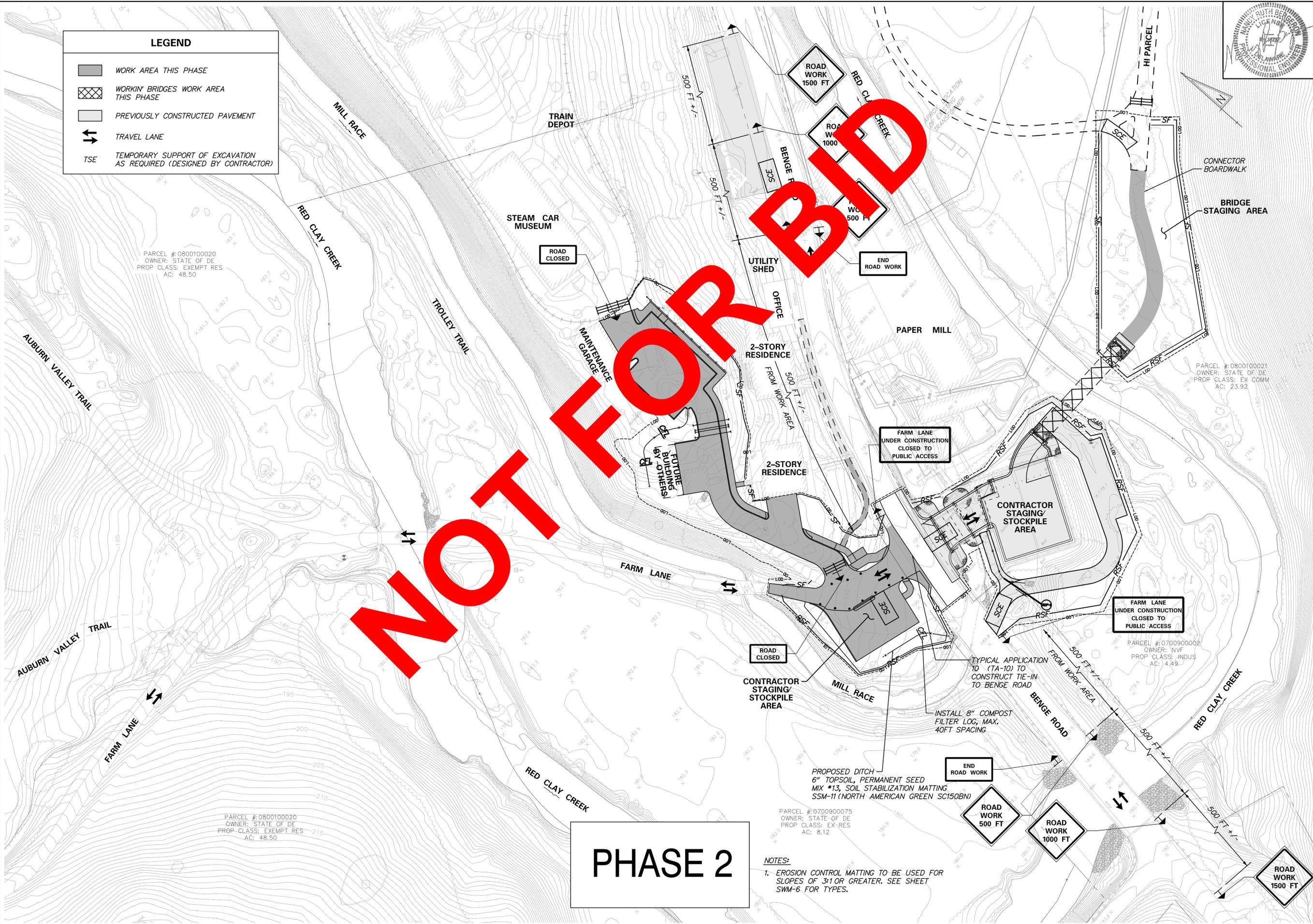
**PHASE 1**

**NOTE:**  
1. EROSION CONTROL MATTING TO BE USED FOR SLOPES OF 3:1 OR GREATER. SHEE SHEET SWM-6 FOR TYPES.

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**LEGEND**

- WORK AREA THIS PHASE
- WORKIN' BRIDGES WORK AREA THIS PHASE
- PREVIOUSLY CONSTRUCTED PAVEMENT
- TRAVEL LANE
- TEMPORARY SUPPORT OF EXCAVATION AS REQUIRED (DESIGNED BY CONTRACTOR)



PARCEL # 0800100020  
OWNER: STATE OF DE  
PROP CLASS: EXEMPT RES  
AC: 48.50

PARCEL # 0800100021  
OWNER: STATE OF DE  
PROP CLASS: EX COMM  
AC: 23.92

PARCEL # 0700900002  
OWNER: NVF  
PROP CLASS: INDUS  
AC: 4.49

PARCEL # 0800100020  
OWNER: STATE OF DE  
PROP CLASS: EXEMPT RES  
AC: 48.50

PARCEL # 0700900075  
OWNER: STATE OF DE  
PROP CLASS: EX RES  
AC: 8.12

**PHASE 2**

**NOTES:**  
1. EROSION CONTROL MATTING TO BE USED FOR SLOPES OF 3:1 OR GREATER. SEE SHEET SWM-6 FOR TYPES.

TYPICAL APPLICATION TO (TA-10) TO CONSTRUCT TIE-IN TO BENG ROAD  
INSTALL 8" COMPOST FILTER LOG, MAX. 40FT SPACING



BY:	
DATE:	
DESCRIPTION:	

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
CONSTRUCTION SEQUENCING &  
EROSION AND SEDIMENT CONTROL PLANS**

DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	1" = 40'
SHEET NO.:	<b>ES-3</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100





**Standard Detail & Specifications**  
**Topsoiling**

**Construction Notes:**

1. **Site Preparation** (Where Topsoil is to be added)

Note: When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, waterways and sediment basins.

a. Grading - Grades on the areas to be topsoiled which have been previously established shall be maintained.

b. Liming - Where the topsoil is either highly acid or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet). Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

c. Tilling - After the areas to be topsoiled have been brought to grade, and immediately prior to dumping and spreading the topsoil, the subgrade shall be loosened by discing or by scarifying to a depth of at least 3 inches to permit bonding of the topsoil to the subsoil. Pack by passing a bulldozer up and down over the entire surface area of the slope to create horizontal erosion check slots to prevent topsoil from sliding down the slope.

2. **Topsoil Material and Application**

Note: Topsoil salvaged from the existing site may often be used but it should meet the same standards as set forth in these specifications. The depth of topsoil to be salvaged shall be no more than the depth described as a representative profile for that particular soil type as described in the soil survey published by USDA-SCS in cooperation with Delaware Agricultural Experimental Station.

Source:	Symbol:	Detail No.
USDA - NRCS		<b>DE-ESC-3.4.1</b> Sheet 1 of 2

**Standard Detail & Specifications**  
**Topsoiling**

**Construction Notes (cont.)**

a. Materials - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand or other soil as approved by an agronomist or soil scientist. It shall not have a mixture of contrasting textured subsoil and contain no more than 5 percent by volume of cinders, stones, slag, coarse fragment, gravel, sticks, roots, trash or other extraneous materials larger than 1-1/2 inches in diameter. Topsoil must be free of plants or plant parts of bermudagrass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistles, or others as specified. All topsoil shall be tested by a reputable laboratory for organic matter content, pH and soluble salts. A pH of 6.0 to 7.5 and an organic content of not less than 1.5 percent by weight is required. If pH value is less than 6.0 lime shall be applied and incorporated with the topsoil to adjust the pH to 6.5 or higher. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

Note: No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed to permit dissipation of toxic materials.

b. Grading - The topsoil shall be uniformly distributed and compacted to a minimum of four (4) inches. Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

Note: Topsoil substitutes or amendments as approved by a qualified agronomist or soil scientist, may be used in lieu of natural topsoil. Compost material used to improve the percentage of organic matter shall be provided by a certified supplier.

Compost amendments that are intended to meet specific post-construction stormwater management goals shall further meet the requirements of **Appendix 3.06.2 Post Construction Stormwater Management BMP Standards and Specifications, Section 14.0 Soil Amendments.**

Source:	Symbol:	Detail No.
USDA - NRCS		<b>DE-ESC-3.4.1</b> Sheet 2 of 2

**Standard Detail & Specifications**  
**Vegetative Stabilization**

**TEMPORARY SEEDING BY RATES, DEPTHS AND DATES**

Mix #	Species <sup>a</sup>	Seeding Rate <sup>b</sup>	Optimum Seeding Dates <sup>c</sup>						Planting Depth <sup>d</sup>
			Coastal Plain	Piedmont	All <sup>e</sup>	10/31-2/1	10/31-2/1	10/31-2/1	
1	Barley	125	A	O	O	O	O	1-2 inches	
2	Oats	125	A	O	O	O	O	1-2 inches	
3	Rye	125	A	O	O	O	O	1-2 inches	
4	Perennial Ryegrass	125	A	O	O	O	O	1-2 inches	
5	Annual Ryegrass	125	A	O	O	O	O	1-2 inches	
6	Winter Wheat	125	A	O	O	O	O	1-2 inches	
7	Foxtail Millet	125	A	O	O	O	O	1-2 inches	
8	Pearl Millet	125	A	O	O	O	O	1-2 inches	

1. Winter seeding requires 3 tons per acre of annual ryegrass for temporary stabilization.  
2. Annual Ryegrass may be added to 1/2 the seeding rate of any of the above species.  
3. Use various varieties recommended for Delaware. Contact a County Extension Office for information.  
4. Warm season grasses such as Millet or Weeping Lovegrass may be used between 5/1 and 8/1 if desired. Seed at 3-5 lbs. per acre on low fertility and acid areas. Seed after frost through summer at a depth of 0.5".

Source:	Symbol:	Detail No.
Delaware ESC Handbook		<b>DE-ESC-3.4.3</b> Sheet 1 of 4

**Standard Detail & Specifications**  
**Vegetative Stabilization**

**PERMANENT SEEDING AND SEEDING DATES**

Mix No.	Certified Seed <sup>a</sup>	Seeding Rate <sup>b</sup>	Optimum Seeding Dates <sup>c</sup>						Remarks
			Coastal Plain	Piedmont	All <sup>e</sup>	10/31-2/1	10/31-2/1	10/31-2/1	
1	Tall Fescue	140	A	O	O	O	O	Good erosion control mix. Tolerant of low fertility soils. Germinates only in hot weather.	
2	Sheep Fescue	30	A	O	O	O	O	Good erosion control mix. Tolerant of low fertility soils. Good wildlife cover and food.	
3	Tall Fescue (Turk-type) or Perennial Ryegrass	50	A	O	O	O	O	Good erosion control mix. Tall Fescue for droughty conditions. Creeping Red Fescue for heavy shade. Flatpea to suppress woody vegetation.	
4	Creeping Red Fescue	100	A	O	O	O	O	Suitable waterway mix. Kentucky Bluegrass more drought tolerant. Use Redtop for increased drought tolerance.	
5	Switchgrass <sup>g</sup> or Coastal Panicgrass	10	O	O	O	O	O	Native warm-season mixture. Tolerant of low fertility soils. Drought tolerant. Poor shade tolerance. N fertilizer discouraged - weeds.	
6	Tall Fescue (Turk-type)	150	A	O	O	O	O	Managed filter strip for nutrient uptake.	
7	Tall Fescue	150	A	O	O	O	O	Three cultivars of Kentucky Bluegrass. Traffic tolerant.	
8	Indian Grass and Bluestem	10	O	O	O	O	O	All species are native. Indian Grass and Bluestem have large seeds. Plant with a specialized native seed drill.	

Source:	Symbol:	Detail No.
Delaware ESC Handbook		<b>DE-ESC-3.4.3</b> Sheet 2 of 4

**Standard Detail & Specifications**  
**Vegetative Stabilization**

**PERMANENT SEEDING AND SEEDING DATES (cont.)**

Mix No.	Certified Seed <sup>a</sup>	Seeding Rate <sup>b</sup>	Optimum Seeding Dates <sup>c</sup>						Remarks
			Coastal Plain	Piedmont	All <sup>e</sup>	10/31-2/1	10/31-2/1	10/31-2/1	
9	Redtop	75	A	O	O	O	O	Quick stabilization of disturbed sites and waterways	
10	Reed Canarygrass <sup>f</sup>	10	A	O	O	O	O	Good erosion control, wildlife cover and wetland revegetation.	
<b>Residential Lawns</b>									
11	Tall Fescue	100	A	O	O	O	O	High value, high maintenance, light traffic, irrigation necessary.	
12	Perennial Ryegrass	25	A	O	O	O	O	Moderate value, low maintenance, traffic tolerant.	
13	Creeping Red Fescue	50	A	O	O	O	O	Shade tolerant, moderate traffic tolerance, moderate maintenance.	
14	Creeping Red Fescue	90	A	O	O	O	O	Shade tolerant, moisture tolerant.	
15	K31 Tall Fescue	150	A	O	O	O	O	Monoculture, but performs well alone in lawns. Discouraged.	

1. When hydroseeding is the chosen method of application, the total rate of seed should be increased by 25%.  
2. Winter seeding requires 3 tons per acre of straw mulch. Planting dates listed above are average for Delaware. These dates may require adjustment to reflect local conditions.  
3. All seeds shall meet the minimum purity and minimum germination percentages recommended by the Delaware Department of Agriculture. The maximum % of weed seeds shall be in accordance with Section 1, Chapter 24, Title 3 of the Delaware Code.  
4. Cool season species may be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.  
5. All leguminous seed must be inoculated.  
6. Warm season grass mix and Reed Canary Grass cannot be mowed more than 4 times per year.  
7. Warm season grasses require a soil temperature of at least 50 degrees in order to germinate, and will remain dormant until then.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		<b>DE-ESC-3.4.3</b> Sheet 3 of 4

**Standard Detail & Specifications**  
**Vegetative Stabilization**

**Construction Notes:**

1. **Site Preparation**

a. Prior to installing erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, waterways, and sediment basins. Grading and seeding is not necessary for temporary seedings.

If a seedbed is to be prepared to insure the success of establishing vegetation. The seedbed should be well prepared, loose, uniform, and free of large clods, rocks, and other objectionable materials. The soil surface should not be compacted or crusted.

2. **Soil Amendments**

a. Lime - Apply liming materials based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply dolomitic limestone at the rate of 1 to 2 tons per acre. Apply limestone uniformly and incorporate into the top 4 to 6 inches of soil.

b. Fertilizer - Apply fertilizer based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply a formulation of 10-10-10 at the rate of 600 pounds per acre. Apply fertilizer uniformly and incorporate into the top 4 to 6 inches of soil.

3. **Seeding**

a. For **temporary stabilization**, select a mixture from **Sheet 1**. For a **permanent stabilization**, select a mixture from **Sheet 2** or **Sheet 3** depending on the conditions.

b. Apply seed uniformly with a broadcast seeder, drill, cultipacker seeder or hydroseeder. All seed will be applied at the recommended rate and planting depth.

c. Seed that has been broadcast should be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used and the seed and fertilizer is mixed, they will be mixed on site and the seeding shall be done immediately and without interruption.

4. **Mulching**

All mulching shall be done in accordance with detail **DE-ESC-3.4.5**.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		<b>DE-ESC-3.4.3</b> Sheet 4 of 4

**Standard Detail & Specifications**  
**Mulching**

**1. Materials and Amounts**

a. **Straw** - Straw shall be unrotted small grain straw applied at the rate of 1-1/2 to 2 tons per acre, or 70 to 90 pounds (two bales) per 1,000 square feet. Mulch materials shall be relatively free of weeds and shall be free of noxious weeds such as, thistles, Johnsongrass, and quackgrass. Spread mulch uniformly by hand or mechanically. For uniform distribution of hand spread mulch, divide area into approximately 1,000 square foot sections and place 70-90 pounds (two bales) of mulch in each section.

b. **Wood chips** - Apply at the rate of approximately 6 tons per acre or 275 pounds per 1,000 square feet when available and when feasible. These are particularly well suited for utility and road rights-of-way. If wood chips are used, increase the application rate of nitrogen fertilizer by 20 pounds of N per acre (200 pounds of 10-10-10 or 66 pounds of 30-0-0 per acre).

c. **Hydraulically applied mulch** - The following conditions apply to hydraulically applied mulch:

- Definitions:
  - Wood fiber mulch shall consist of specially prepared wood that has been processed to a uniform slate, is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment, and consists of a minimum of 70% virgin or recycled wood fiber combined with 30% paper fiber and additives.
  - Blended fiber mulch shall consist of any hydraulic mulch that contains greater than 30% paper fiber. The paper component must consist of specially prepared paper that has been processed to a uniform fibrous slate and is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment.
  - A bonded fiber matrix (BFM) consists of long strand, specially prepared wood fibers that have been processed to a uniform slate held together by a water resistant bonding agent. BFM's shall contain no paper (cellulose) mulch but may contain small percentages of synthetic fibers to enhance performance.
  - Refer to **Figure 3.4.5a** for conditions and limitations of use for each of the above categories of hydraulic mulch.
- All components of the hydraulically applied mulches shall be pre-packaged by the manufacturer to assure material performance. Field mixing of the mulch components is acceptable, but must be done per manufacturers recommendations to ensure the proper results.
- Hydraulic mulches shall be applied with a viable seed and at manufacturer's recommended rates. Increased rates may be necessary based on site conditions.
- Hydraulically applied mulches and additives shall be mixed according to manufacturers recommendations.
- Materials within this category shall only be used when hydraulically applied mulch has been specified for use on the approved Sediment and Stormwater Plan, or supplemental approval from the plan approval agency has been obtained in writing for a specific area.

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filtrix <sup>TM</sup> International		<b>DE-ESC-3.4.5</b> Sheet 1 of 3

**Standard Detail & Specifications**  
**Mulching**

v. Application:

- Apply product to geotechnically stable slopes that have been designed and constructed to divert runoff away from the face of the slope.
- Do not apply to saturated soils, or if precipitation is anticipated within 24-48 hours.
- During the spring (March 1 to May 31) and fall (September 1 to November 30) seasons, hydraulic mulches may be applied in a one-step process where all components are mixed together in single-tank loads. It is recommended that the product be applied from opposing directions to achieve optimum soil coverage.
- During the summer (June 1 to August 31) and winter (December 1 to February 28) seasons, the following two-step process is required:
  - Step One - Mix and apply seed and soil amendments with a small amount of mulch for visual metering.
  - Step Two - Mix and apply mulch at manufacturers recommended rates over freshly seeded surfaces. Apply from opposing directions to achieve optimum soil coverage.
- Minimum curing temperature is 40°F (4°C). The best results and more rapid curing are achieved at temperatures exceeding 60°F (15°C). Curing times may be accelerated in high temperature, low humidity conditions on dry soils.
- Recommended application rates are for informational purposes only. Conformance with this standard and specification shall be performance-based and requires **100% soil coverage**. Any areas with bare soil showing shall be top dressed until full coverage is achieved.

2. **Anchoring mulch** - Mulch must be anchored immediately to minimize loss by wind or water. This may be done by one of the following methods, depending upon size of area, erosion hazard, and cost.

- Crimping** - A crimper is a tractor drawn implement designed to punch and anchor mulch into the top two (2) inches of soil. This practice affords maximum erosion control but is limited to flatter slopes where equipment can operate safely. On sloping land, crimping should be done on the contour whenever possible.
- Tracking** - Tracking is the process of cutting mulch (usually straw) into the soil using a bulldozer or other equipment that runs on cleated tracks. Tracking is used primarily on slopes 3:1 or steeper and should be done up and down the slope with clear marks running across the slope.
- Liquid mulch binders** - Applications of liquid mulch binders should be heavier at edges, in valleys, and at crests of banks and other areas where the mulch will be moved by wind or water. All other areas should have a uniform application of binder. The use of synthetic binders is the preferred method of mulch binding and should be applied at the rates recommended by the manufacturer.
- Paper fiber** - The fiber binder shall be applied at a net dry weight of 750 lbs/ac. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons.
- Nettings** - Synthetic or organic nettings may be used to secure straw mulch. Install and secure according to the manufacturers recommendations.

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filtrix <sup>TM</sup> International		<b>DE-ESC-3.4.5</b> Sheet 2 of 3

BY: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

DATE: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

DATE: \_\_\_\_\_

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE**

**CONSTRUCTION PHASING & EROSION AND  
SEDIMENT CONTROL DETAILS**

DESIGNED BY: RKK

DRAWN BY: RKK

BUILDING NO.: N/A

DATE: 4/28/2017

SCALE: NOT TO SCALE

SHEET NO.: **ES-5**

PARKS PROJECT #: NVF-4

CONTRACT #: 2015-NVF-100

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# STRUCTURAL GENERAL NOTES

1. THESE STRUCTURAL GENERAL NOTES APPLY TO THE FOLLOWING STRUCTURES

- A. STRUCTURE 1 (S1) - PAPER MILL BRIDGE OVER RED CLAY CREEK
- B. STRUCTURE 2 (S2) - MILL RACE DECKOVER STRUCTURE (CONTRACTOR DESIGN BUILD)

2. DESIGN SPECIFICATIONS

- A. 2014 AASHTO LRFD BRIDGE SPECIFICATIONS, 7TH EDITION, WITH 2015 INTERIMS, CUSTOMARY U.S. UNITS. (S1)
- B. CURRENT AASHTO LRFD BRIDGE SPECIFICATIONS INCLUDING ALL INTERIMS. (S2)
- C. MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE DELDOT STANDARD SPECIFICATIONS. (S1 & S2)

3. LOADING

A. STRUCTURE 1 (PAPER MILL BRIDGE): VERTICAL LOADS IMPARTED ON THE SUBSTRUCTURE BY THE TRUSS SUPERSTRUCTURE ARE AS PROVIDED BY THE SPECIALTY SUPERSTRUCTURE SUPPLIER. SEE THE REFERENCE DRAWINGS. HORIZONTAL LOADS ARE IN ACCORDANCE WITH AASHTO. SEE STRUCTURE 3 CONTRACTOR COORDINATION REQUIREMENTS BELOW FOR LIMITATIONS ON LOADS TO BE IMPARTED BY STRUCTURE 3.

B. STRUCTURE 2 (MILL RACE DECKOVER STRUCTURE): SEE SPECIFICATIONS.

4. EXISTING CONDITIONS (S1 & S2)

A. ALL EXISTING DIMENSIONS AND ELEVATIONS SHOWN ARE BASED ON THE BEST AVAILABLE INFORMATION AND ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS, GEOMETRY, AND ELEVATIONS AS NECESSARY PRIOR TO ORDERING ANY MATERIALS AND COMMENCING CONSTRUCTION TO ENSURE PROPER FIT OF THE PROPOSED CONSTRUCTION.

5. UTILITIES (S1 & S2)

A. SEE UTILITY PLAN SHEET FOR FURTHER INFORMATION ON UTILITY COORDINATION.

6. PORTLAND CEMENT CONCRETE (S1 & S2)

A. USE PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS AS FOLLOWS:

- (f'c = 28 DAY COMPRESSIVE STRENGTH)
  - CLASS A - ABUTMENT BACKWALLS, ABUTMENT STEMS, ABUTMENT FOOTINGS, WINGWALL STEMS, WINGWALL FOOTINGS, (f'c = 4.5 KSI)
  - CLASS B - NOT USED, (f'c = 3.0 KSI)
  - CLASS C - NOT USED, (f'c = 2.0 KSI)
  - CLASS D - NOT USED, (f'c = 4.5 KSI)
- A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST TO OWNER WITH APPROVAL OF THE ENGINEER.

- B. CHAMFER ALL EXPOSED EDGES 3/4"x3/4" UNLESS OTHERWISE NOTED
- C. DO NOT SLIP FORM BARRIERS, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

7. BAR REINFORCEMENT (S1 & S2)

- A. REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60.
- B. REINFORCING STEEL SHALL HAVE A 3" CLEAR COVER IF CAST AGAINST EARTH OR A 2" CLEAR COVER ELSEWHERE, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- C. ALL REINFORCING STEEL SHALL BE PROTECTED WITH FUSION BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3951).
- D. ANY FIELD CUTTING OR FIELD BENDING MUST BE APPROVED BY THE ENGINEER.
- E. GALVANIZED REINFORCING STEEL MAY BE SUBSTITUTED FOR EPOXY-COATED REINFORCING STEEL AT NO ADDITIONAL COST TO OWNER WITH APPROVAL OF THE ENGINEER.
- F. WELDING OF REINFORCING STEEL DURING FABRICATION OR CONSTRUCTION IS NOT PERMITTED UNLESS SPECIFIED.
- G. LAPS AND DEVELOPMENT LENGTHS NOT SHOWN SHALL BE PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- H. CONCRETE FINISHING SHALL BE PER THE DELDOT STANDARD SPECIFICATIONS EXCEPT FOR THE INSIDE FACES OF STEEL TUBE RAIL CURBS WHICH SHALL RECEIVE A RUBBED SURFACE FINISH.

8. BEARINGS (S1)

A. BEARINGS AND ANCHOR BOLTS WILL BE INSTALLED BY THE SPECIALTY SUPERSTRUCTURE SUPPLIER FOR STRUCTURE 1. SEE COORDINATION REQUIREMENTS ELSEWHERE IN THE CONTRACT DOCUMENTS.

9. PERFORATED PIPE UNDERDRAINS (S1)

A. MINIMUM INSTALLATION SLOPE SHALL BE 0.02 FT/FT. CAP FREE ENDS.

10. REFERENCE DRAWINGS (S1)

A. DRAWINGS FOR THE SUPERSTRUCTURE AT THE PAPER MILL BRIDGE (S1), PREPARED BY THE SCHIFFER GROUP, INC., ARE PROVIDED FOR REFERENCE ONLY. THE SUPERSTRUCTURE IS TO BE INSTALLED BY OTHERS AND IS NOT PART OF THIS CONTRACT. SEE COORDINATION REQUIREMENTS ELSEWHERE IN THE CONTRACT DOCUMENTS.

11. USE OF WELL POINTS (S1)

A. SOIL BORINGS HAVE IDENTIFIED A POTENTIALLY HIGH WATER TABLE RELATIVE TO THE PROPOSED STRUCTURE 1 FOUNDATIONS. IF NEEDED AND WITH APPROVAL OF THE OWNER AND/OR OWNER'S REPRESENTATIVE, A WELL POINT SYSTEM SHALL BE USED TO LOWER GROUNDWATER ELEVATION.

12. MILL RACE DECKOVER STRUCTURE (S2)

A. DESIGN/BUILD - SEE SPECIFICATIONS, MILL RACE DECKOVER STRUCTURE.

13. STRUCTURAL BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF DELDOT BORR TYPE C. (S1)

14. BRIDGE SHALLOW FOUNDATIONS (S1)

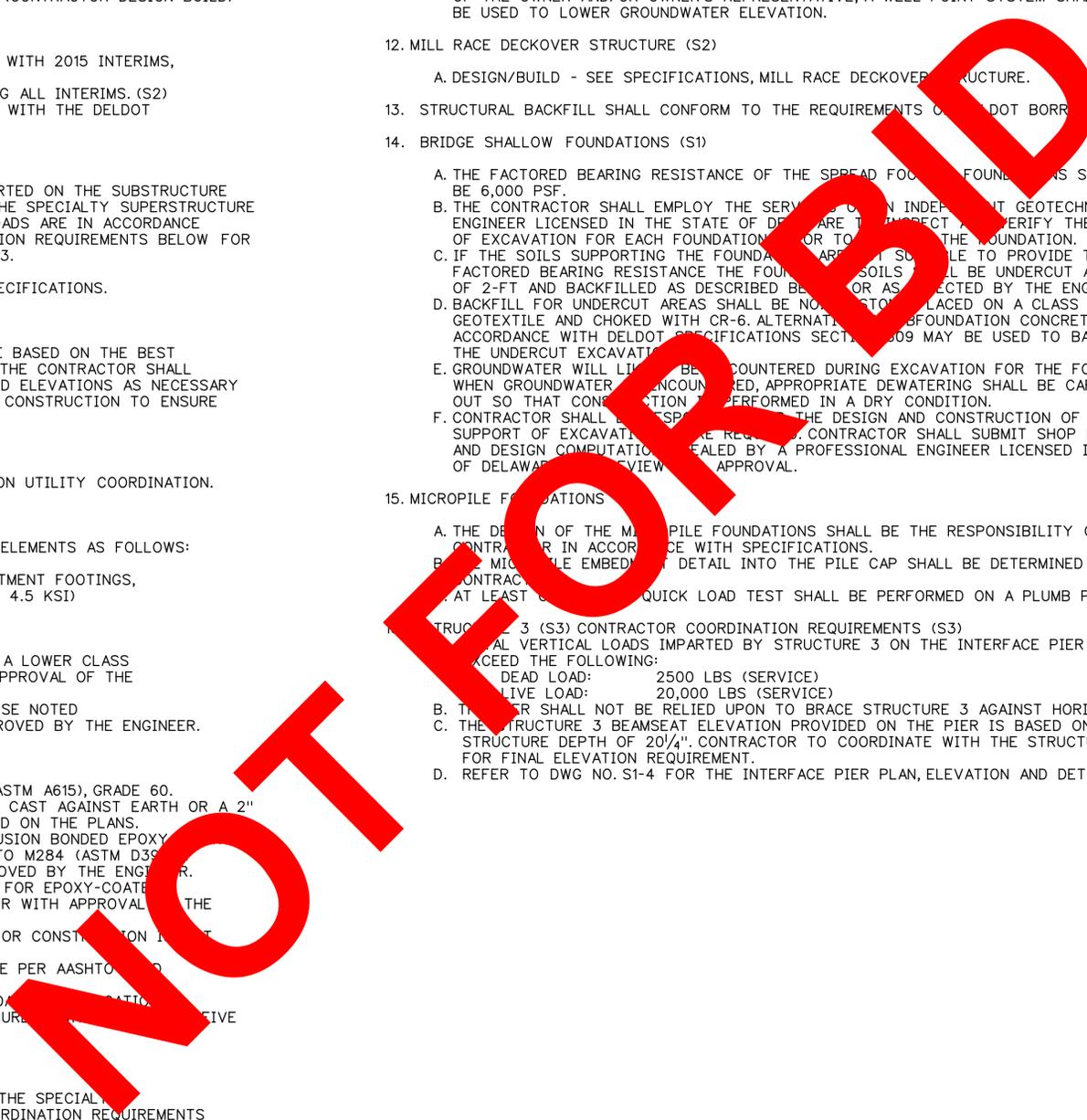
- A. THE FACTORED BEARING RESISTANCE OF THE SPREAD FOUNDATIONS SHALL BE 6,000 PSF.
- B. THE CONTRACTOR SHALL EMPLOY THE SERVICES OF AN INDEPENDENT GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF DELAWARE TO INSPECT AND VERIFY THE BOTTOM OF EXCAVATION FOR EACH FOUNDATION PRIOR TO THE FOUNDATION.
- C. IF THE SOILS SUPPORTING THE FOUNDATIONS ARE NOT SUITABLE TO PROVIDE THE FACTORED BEARING RESISTANCE THE FOUNDATION SOILS SHALL BE UNDERCUT A MINIMUM OF 2-FT AND BACKFILLED AS DESCRIBED BELOW OR AS DIRECTED BY THE ENGINEER.
- D. BACKFILL FOR UNDERCUT AREAS SHALL BE NON-SETTLING PLACED ON A CLASS SE GEOTEXTILE AND CHOKED WITH CR-6. ALTERNATIVELY, FOUNDATION CONCRETE, IN ACCORDANCE WITH DELDOT SPECIFICATIONS SECTION 309 MAY BE USED TO BACKFILL THE UNDERCUT EXCAVATION.
- E. GROUNDWATER WILL LIKELY BE ENCOUNTERED DURING EXCAVATION FOR THE FOUNDATIONS. WHEN GROUNDWATER IS ENCOUNTERED, APPROPRIATE DEWATERING SHALL BE CARRIED OUT SO THAT CONSTRUCTION IS PERFORMED IN A DRY CONDITION.
- F. CONTRACTOR SHALL PROVIDE THE DESIGN AND CONSTRUCTION OF TEMPORARY SUPPORT OF EXCAVATION AS REQUIRED. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN COMPUTATIONS SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF DELAWARE FOR REVIEW AND APPROVAL.

15. MICROPILE FOUNDATIONS

- A. THE DESIGN OF THE MICROPILE FOUNDATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IN ACCORDANCE WITH SPECIFICATIONS.
- B. MICROPILE EMBEDMENT DETAIL INTO THE PILE CAP SHALL BE DETERMINED BY THE CONTRACTOR.
- C. AT LEAST ONE QUICK LOAD TEST SHALL BE PERFORMED ON A PLUMB PILE.

STRUCTURE 3 (S3) CONTRACTOR COORDINATION REQUIREMENTS (S3)

- A. ALL VERTICAL LOADS IMPARTED BY STRUCTURE 3 ON THE INTERFACE PIER SHALL NOT EXCEED THE FOLLOWING:
  - DEAD LOAD: 2500 LBS (SERVICE)
  - LIVE LOAD: 20,000 LBS (SERVICE)
- B. THE PIER SHALL NOT BE RELIED UPON TO BRACE STRUCTURE 3 AGAINST HORIZONTAL LOADS.
- C. THE STRUCTURE 3 BEAMSEAT ELEVATION PROVIDED ON THE PIER IS BASED ON AN ASSUMED STRUCTURE DEPTH OF 20 1/4". CONTRACTOR TO COORDINATE WITH THE STRUCTURE 3 DESIGNER FOR FINAL ELEVATION REQUIREMENT.
- D. REFER TO DWG NO. S1-4 FOR THE INTERFACE PIER PLAN, ELEVATION AND DETAILS.



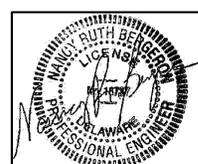
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DATE:	
DESCRIPTION:	

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE**

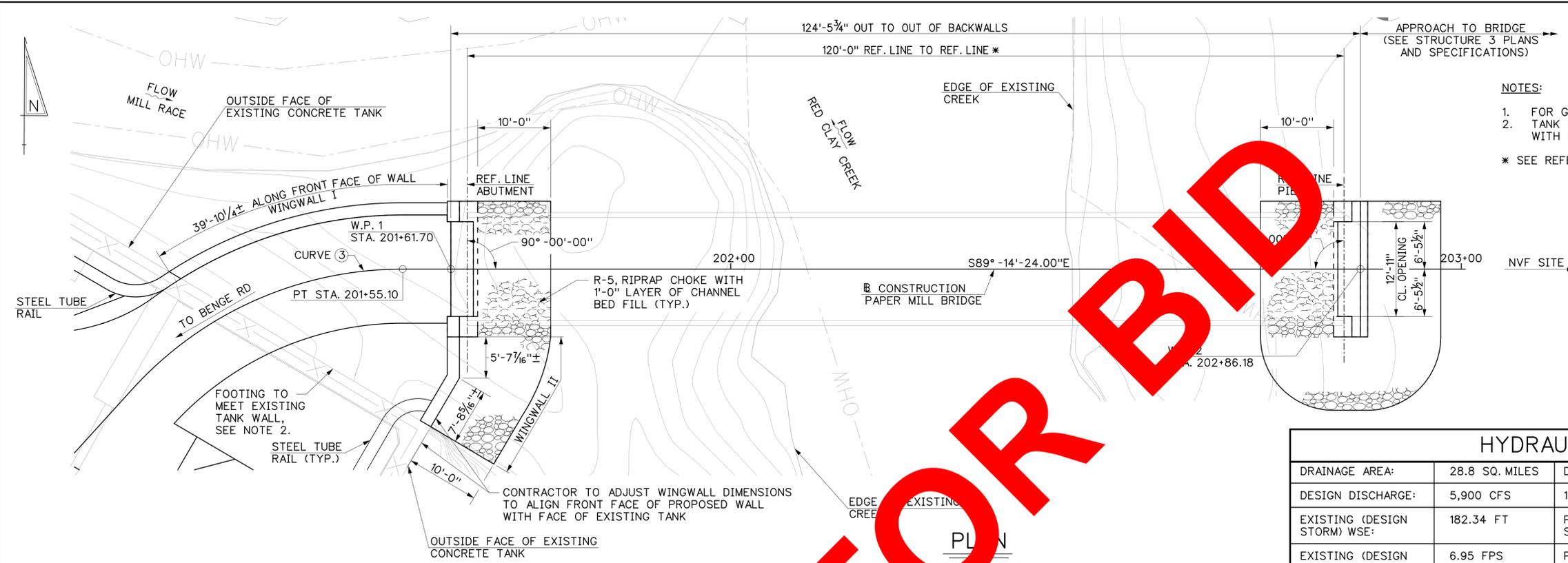
**STRUCTURAL GENERAL NOTES**



DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	
SHEET NO.:	<b>SN-1</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



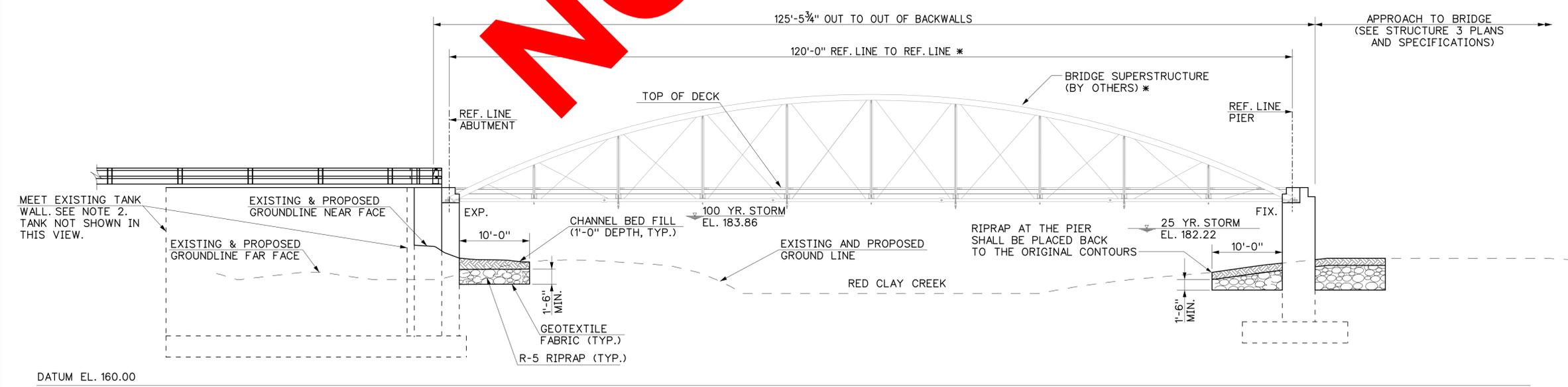
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NOTES:  
 1. FOR GENERAL NOTES, SEE DRAWING NO. SN-1.  
 2. TANK FOOTING CONFIGURATION UNKNOWN. COORDINATE WITH ENGINEER BASED ON FIELD CONDITION.  
 \* SEE REFERENCE DRAWINGS.

HYDRAULIC DATA			
DRAINAGE AREA:	28.8 SQ. MILES	DESIGN FREQUENCY:	25 YEARS
DESIGN DISCHARGE:	5,900 CFS	100 YEAR DISCHARGE:	8,700 CFS
EXISTING (DESIGN STORM) WSE:	182.34 FT	PROPOSED (DESIGN STORM) WSE:	182.22 FT
EXISTING (DESIGN STORM) VELOCITY:	6.95 FPS	PROPOSED (DESIGN STORM) VELOCITY:	7.24 FPS
EXISTING 100-YEAR WSE:	183.99 FT	PROPOSED 100-YEAR WSE:	183.86 FT
EXISTING 100-YEAR VELOCITY:	8.34 FPS	PROPOSED 100-YEAR VELOCITY:	8.75 FPS
EXISTING WATERWAY OPENING:	N/A	PROPOSED WATERWAY OPENING:	955 SQ. FT

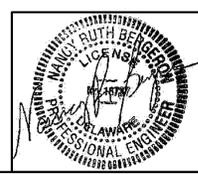
SCOUR ANALYSIS:  
 A. SCOUR DESIGN FREQUENCY: (100-YEAR)  
 B. SCOUR DESIGN FLOOD DISCHARGE: 8,700 CFS  
 C. SCOUR DESIGN FLOOD VELOCITY: 8.75 FPS (AT BRIDGE OUTLET)  
 D. WATER SURFACE ELEVATION: 183.86 FT (IMMEDIATELY UPSTREAM OF BRIDGE)  
 E. CALCULATED SCOUR DEPTH AT EACH SUBSTRUCTURE UNIT:  
 1. ABUTMENT: 7.7 FT  
 2. PIER: 7.1 FT  
 F. SCOUR COUNTERMEASURES HAVE BEEN DESIGNED FOR THE SCOUR DESIGN FLOOD IN ACCORDANCE WITH HEC 23-BRIDGE SCOUR AND STREAM INSTABILITY COUNTERMEASURES.



ELEVATION  
 SCALE: 1/8"=1'-0"

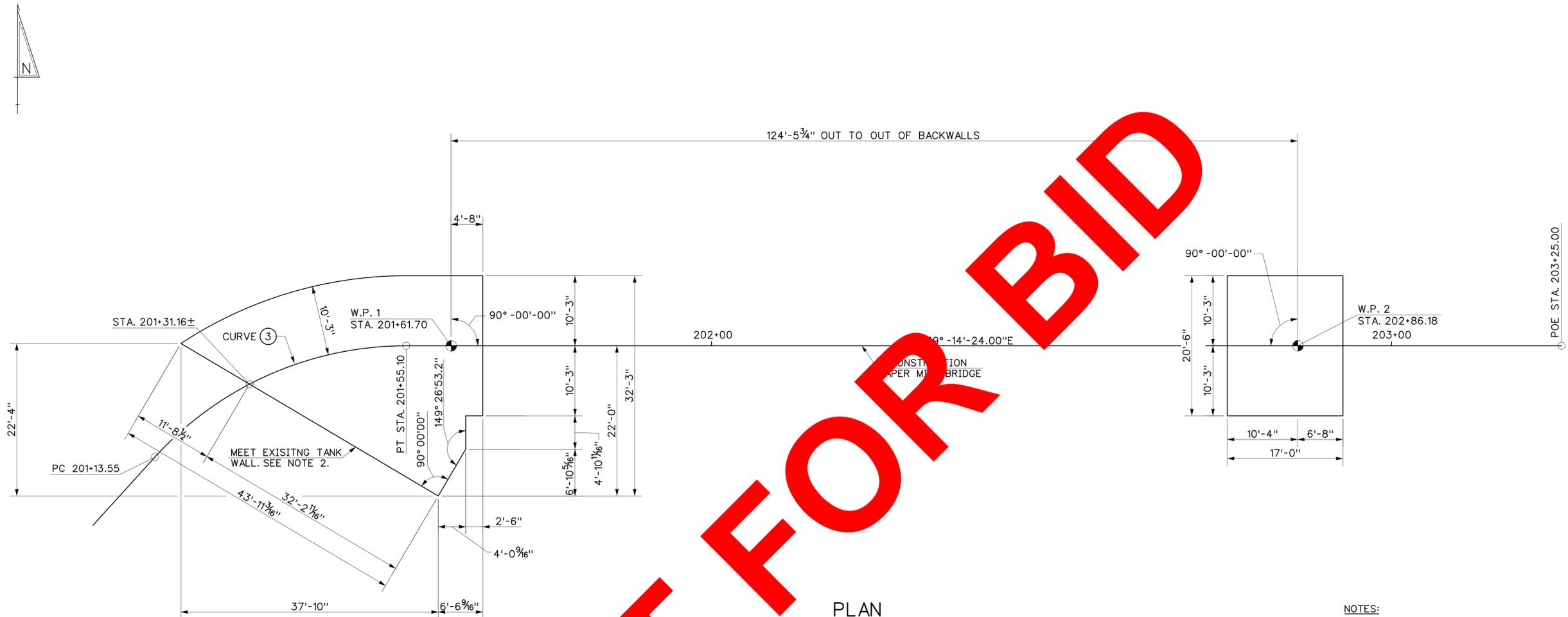
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DATE:	DESCRIPTION:	BY:	
DATE:	DESCRIPTION:	BY:	
<p><b>AUBURN HEIGHTS PRESERVE          PAPER MILL BRIDGE</b></p> <p><b>PAPER MILL BRIDGE OVER RED CLAY CREEK          GENERAL PLAN AND ELEVATION</b></p>			
			
DESIGNED BY: RKK			
DRAWN BY: RKK			
BUILDING NO.: N/A			
DATE: 4/28/2017			
SCALE: 1/8"=1'-0"			
SHEET NO.: S1-1			
PARKS PROJECT #: NVF-4			
CONTRACT #: 2015-NVF-100			



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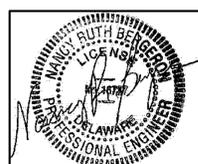


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PLAN  
 SCALE: 1/8" = 1'-0"

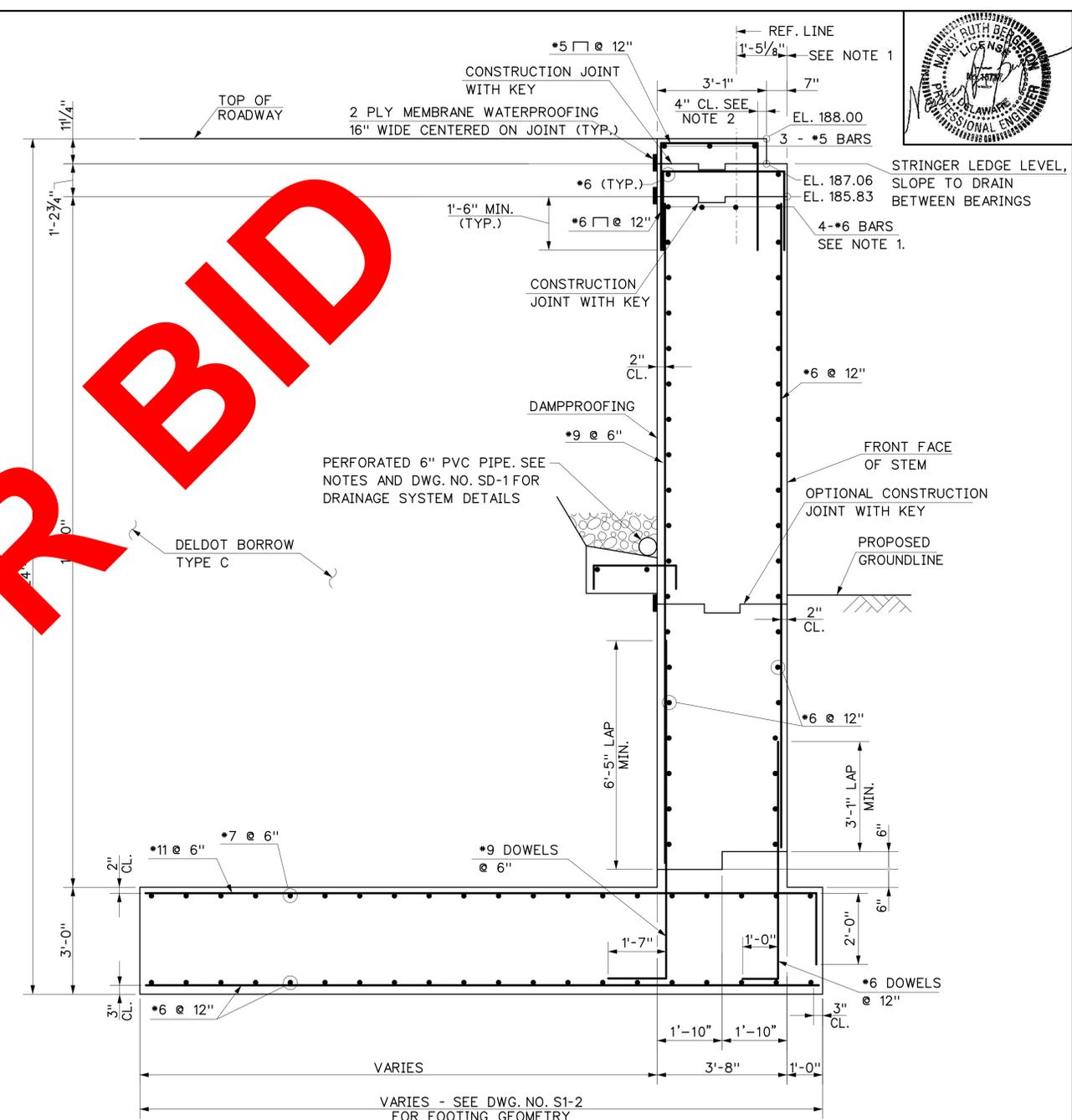
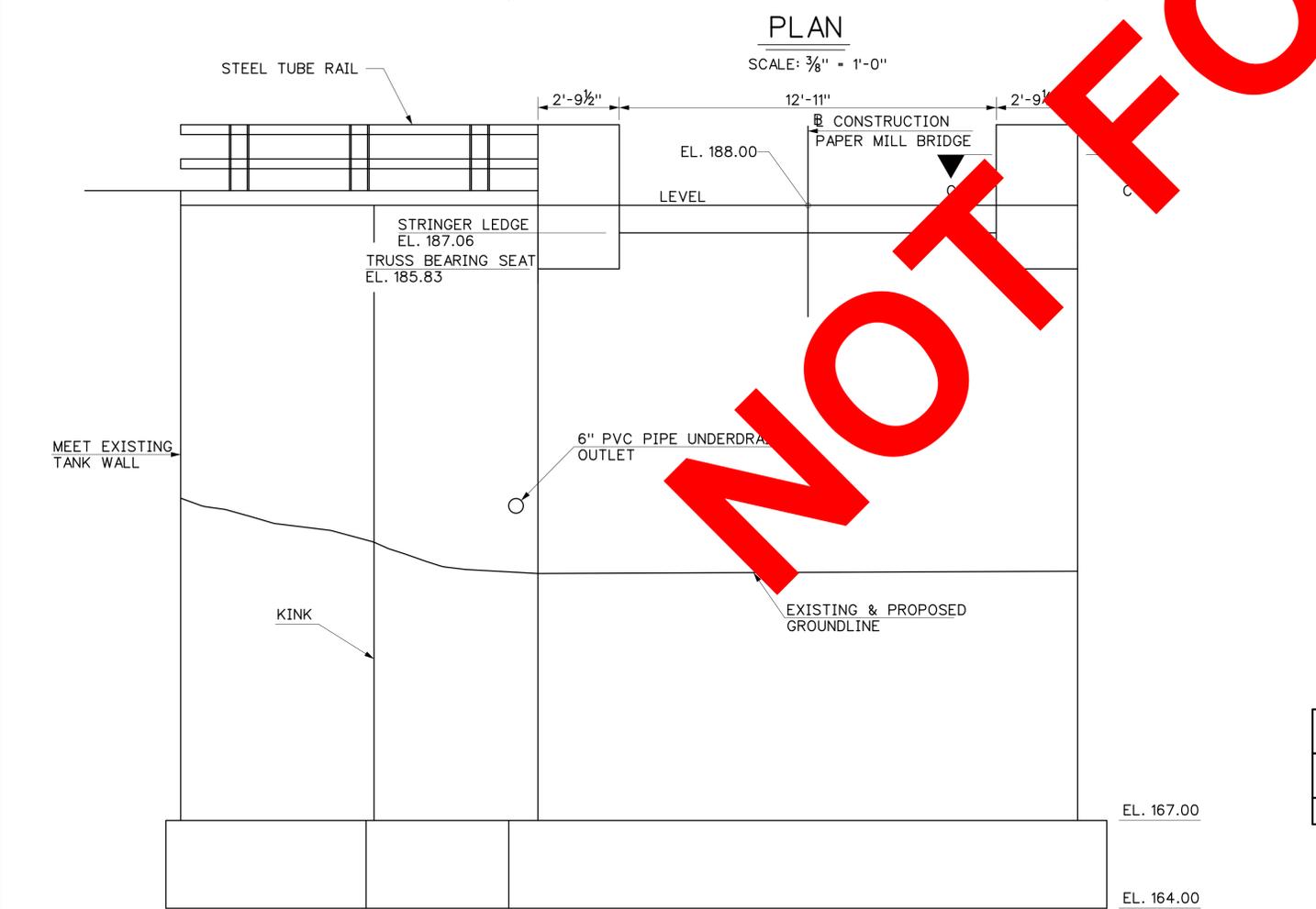
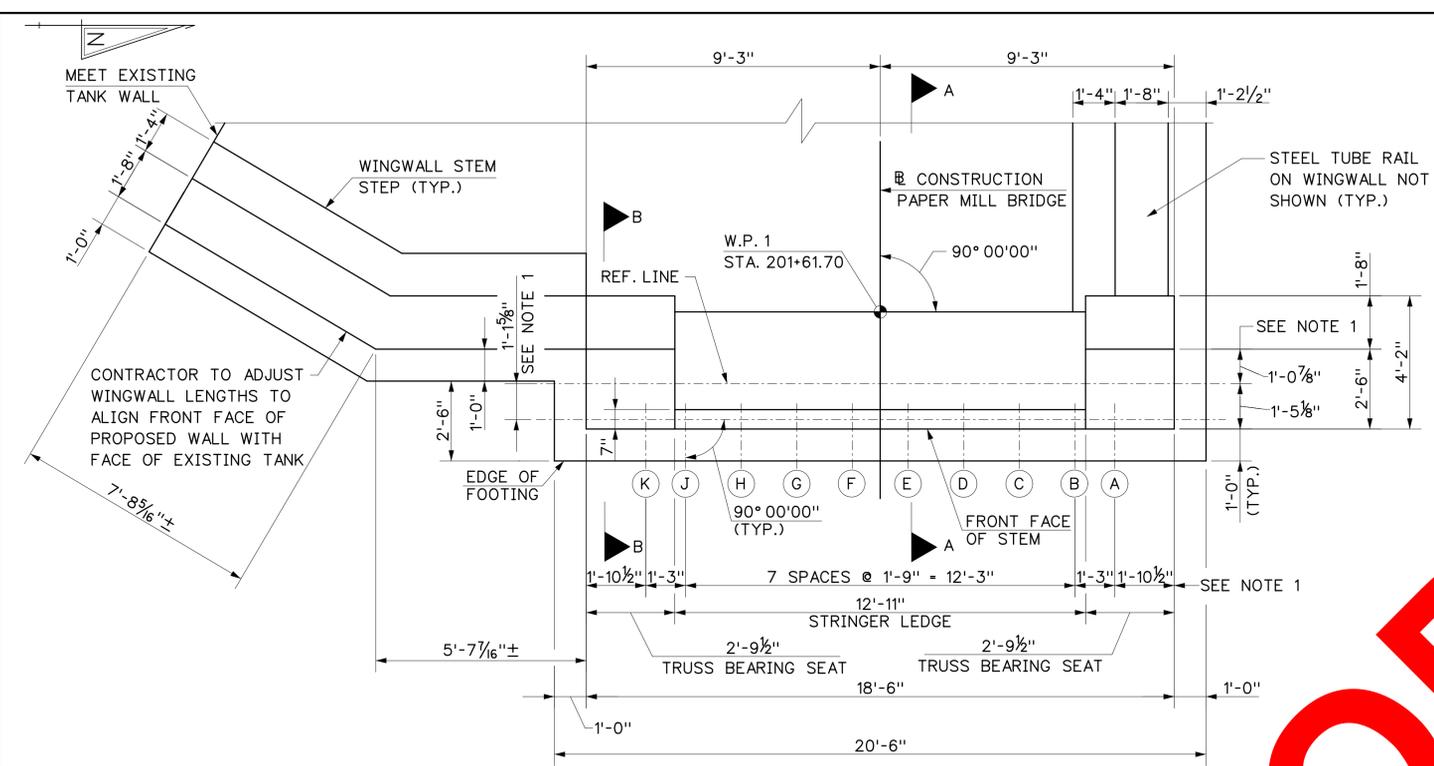
- NOTES:
- SEE ROADWAY PLANS FOR BASELINE GEOMETRY.
  - TANK FOOTING CONFIGURATION UNKNOWN. COORDINATE WITH ENGINEER BASED ON FIELD CONDITION. CONTRACTOR TO ADJUST WINGWALL AND FOOTING DIMENSIONS TO MEET EXISTING TANK.

WORKING POINT TABLE				
W.P. NO.	STATION	OFFSET	NORTHING	EASTING
1	201+61.70	0.00'	658267.8445	582286.7385
2	202+86.18	0.00'	658266.1934	582411.2068



	DATE: _____
	DESCRIPTION: _____
	BY: _____
	DATE: _____
	DESCRIPTION: _____
	BY: _____
	
<b>AUBURN HEIGHTS PRESERVE          PAPER MILL BRIDGE</b>	
<b>PAPER MILL BRIDGE OVER RED CLAY CREEK          GEOMETRIC AND FOOTING LAYOUT</b>	
DESIGNED BY: RKK	
DRAWN BY: RKK	
BUILDING NO.: N/A	
DATE: 4/28/2017	
SCALE: 1/8" = 1'-0"	
SHEET NO.: <b>S1-2</b>	
PARKS PROJECT #: NVF-4	
CONTRACT #: 2015-NVF-100	

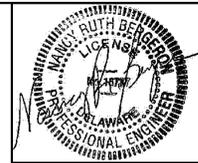
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TEMPERATURE AT TIME OF SETTING		JOINT OPENING @					
		40° F	50° F	60° F	70° F	80° F	90° F
JOINT OPENING		1 3/16"	1 1/16"	1"	1 5/16"	1 3/16"	3/4"

- NOTES:
1. BEARINGS AND ANCHOR BOLTS TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL ADJUST REINFORCING STEEL TO AVOID CONFLICTS WITH ANCHOR BOLTS. SEE COORDINATION REQUIREMENTS ELSEWHERE IN CONTRACT DOCUMENTS. SEE REFERENCE DRAWINGS.
  2. THE CONTRACTOR SHALL POUR THE BACKWALL AFTER THE SUPERSTRUCTURE HAS BEEN SET. ADJUST THE CLEAR COVER TO PROVIDE A JOINT OPENING OF 1" AT THE FIXED BEARING END AND AN OPENING BASED ON THE JOINT OPENING TABLE AT THE EXPANSION END. MIN. COVER = 2", MAX. COVER = 6".
  3. PLATE TO COVER JOINT OPENING TO BE FURNISHED BY OTHERS. SEE COORDINATION REQUIREMENTS ELSEWHERE.
  4. TANK FOOTING CONFIGURATION UNKNOWN. COORDINATE WITH ENGINEER BASED ON FIELD CONDITION.
  5. FOR SECTIONS B-B, C-C, SEE DWG. NO. S1-4.
  6. EXACT LOCATION AND ELEVATION OF UNDERDRAIN OUTLETS TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. LOCATIONS SHALL GENERALLY CONFORM TO THE APPROXIMATE LOCATIONS SHOWN. UNDERDRAIN BEHIND THE ABUTMENT STEM SHALL DRAIN TO THE WINGWALLS.

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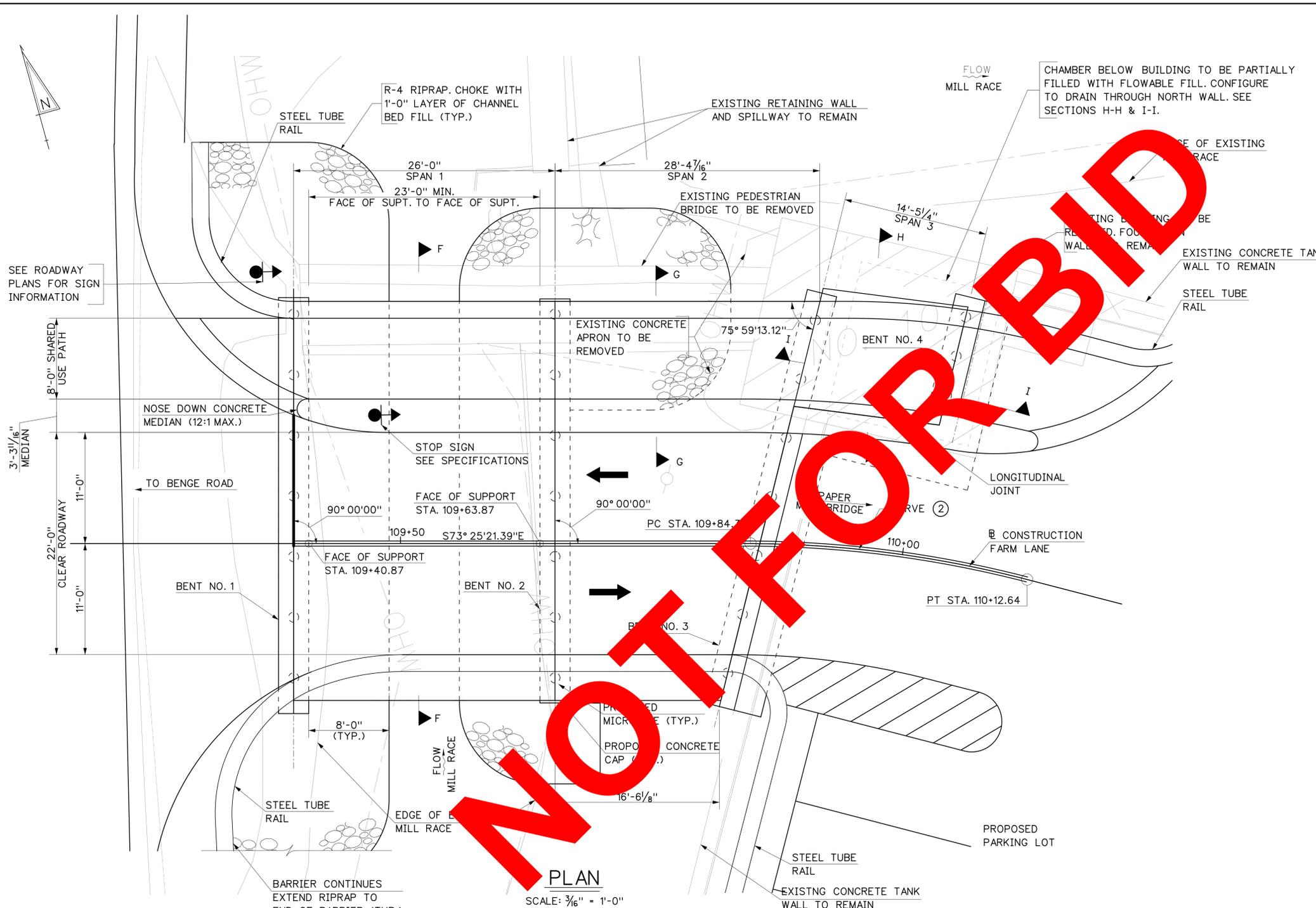


BY:	
DATE:	
DESCRIPTION:	
<b>AUBURN HEIGHTS PRESERVE PAPER MILL BRIDGE</b>	
<b>PAPER MILL BRIDGE - ABUTMENT PLAN, ELEVATION AND SECTION</b>	
DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	AS NOTED
SHEET NO.:	<b>S1-3</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100

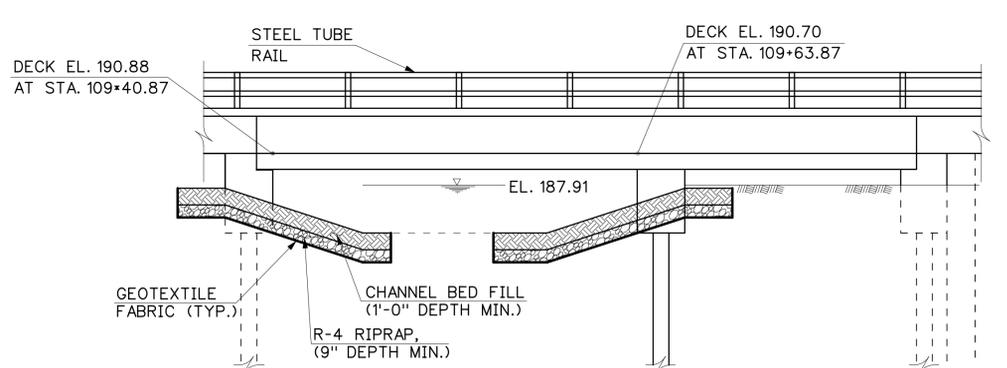




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**PLAN**  
SCALE: 3/16" = 1'-0"



**ELEVATION**  
SCALE: 3/16" = 1'-0"

- NOTES:**
- FOR GENERAL NOTES, SEE DWG. NO. SN-1.
  - THE MILL RACE DECKOVER STRUCTURE IS A DESIGN/BUILD ELEMENT OF THE CONTRACT AND SHALL BE DESIGNED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
  - FOR EXISTING STRUCTURES TO BE REMOVED, SEE DEMOLITION PLANS.
  - SEE DWG. NO. S2-2 FOR SECTIONS.

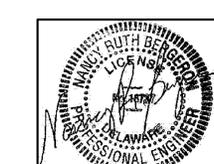
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DATE:	DESCRIPTION:	BY:

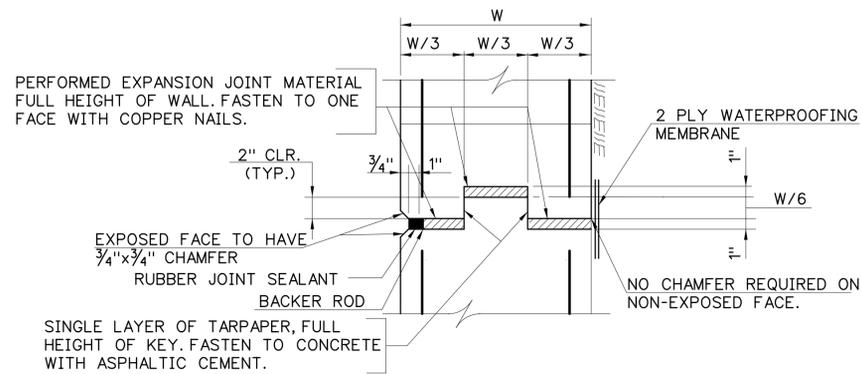
**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
MILL RACE DECKOVER STRUCTURE  
GENERAL PLAN AND ELEVATION**



DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	3/16" = 1'-0"
SHEET NO.:	<b>S2-1</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



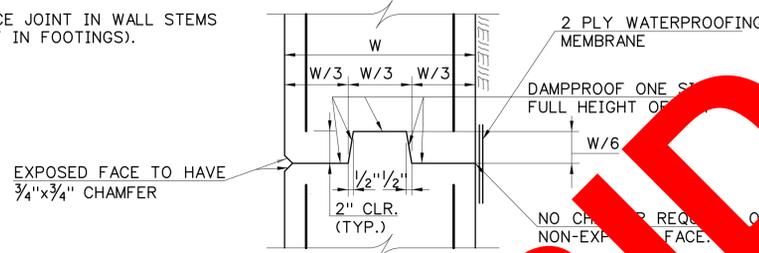




**EXPANSION JOINT DETAIL**

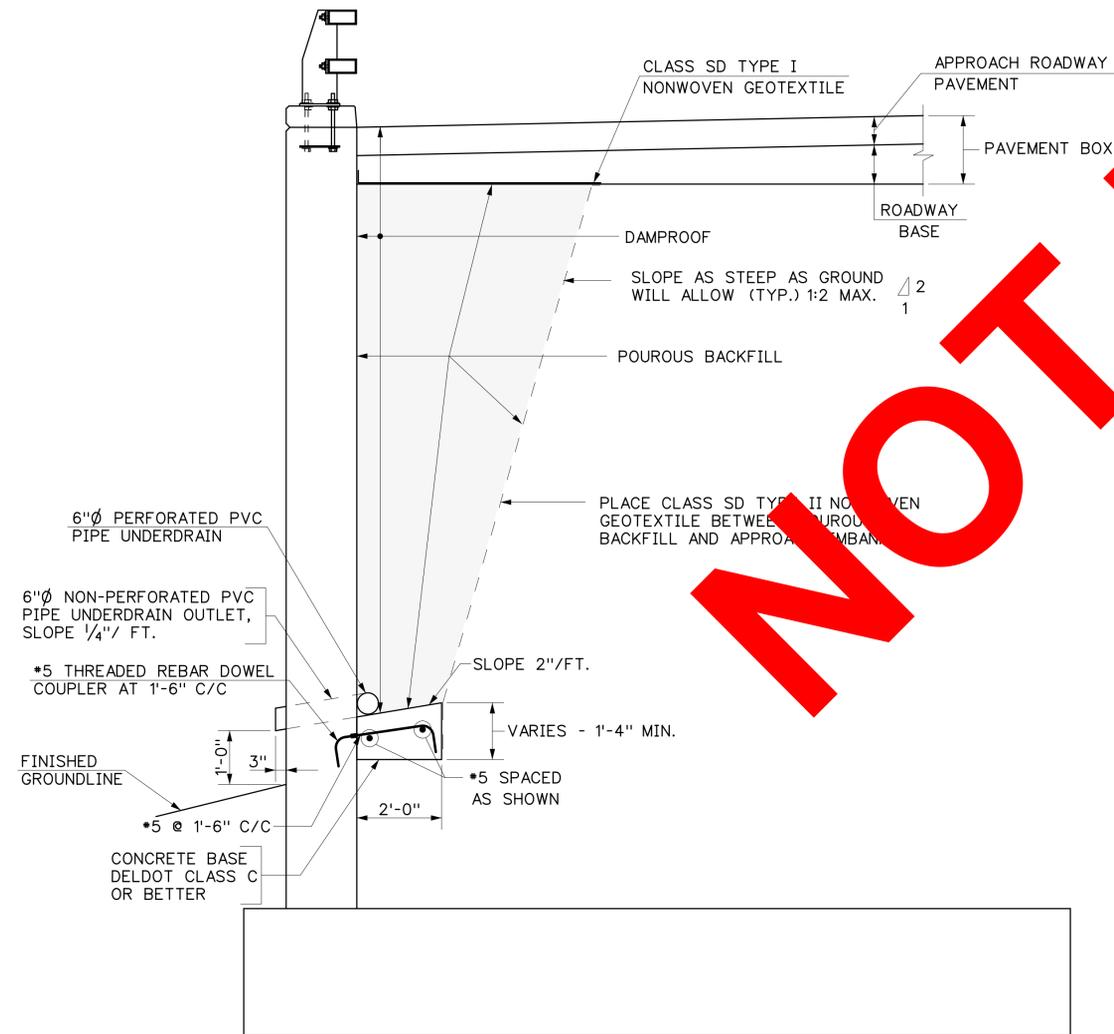
SCALE: 1/2"=1'-0"

- NOTES:**
1. STOP KEY 9" BELOW TOP OF WALL.
  2. REINFORCING STEEL SHALL NOT PASS THROUGH JOINT.
  3. ONLY PLACE JOINT IN WALL STEMS (NO JOINT IN FOOTINGS).



**CONTRACTION JOINT DETAIL**

SCALE: 1/2"=1'-0"



**WINGWALL & ABUTMENT DRAINAGE SYSTEM**

SCALE: 1/2"=1'-0"

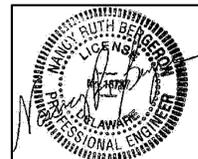
NOT FOR BID

DATE:	DESCRIPTION:	BY:

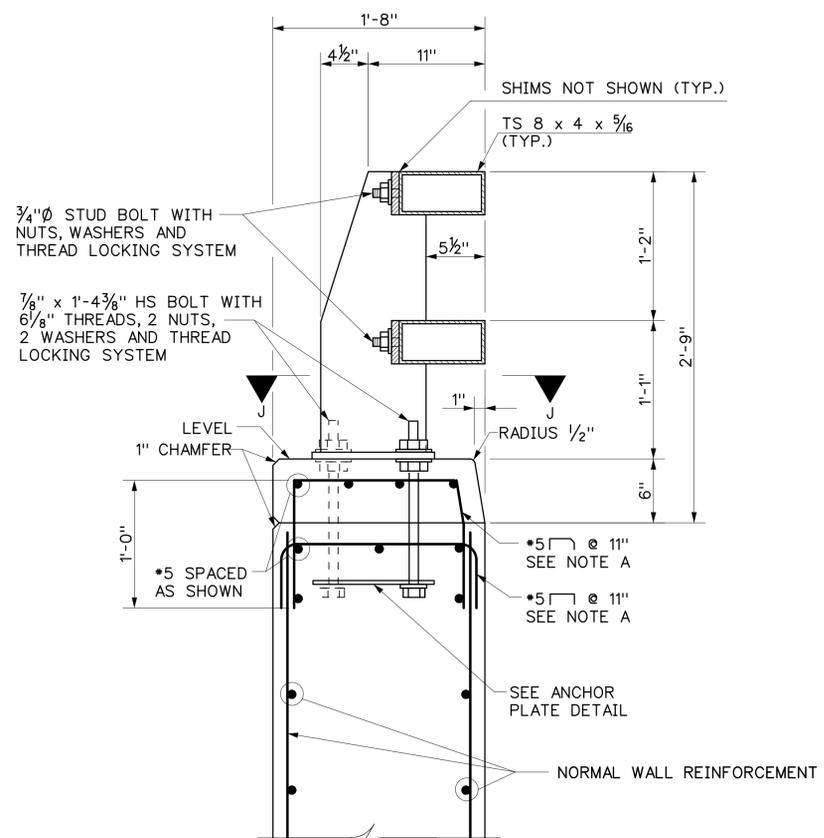
**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
STRUCTURAL DETAILS**



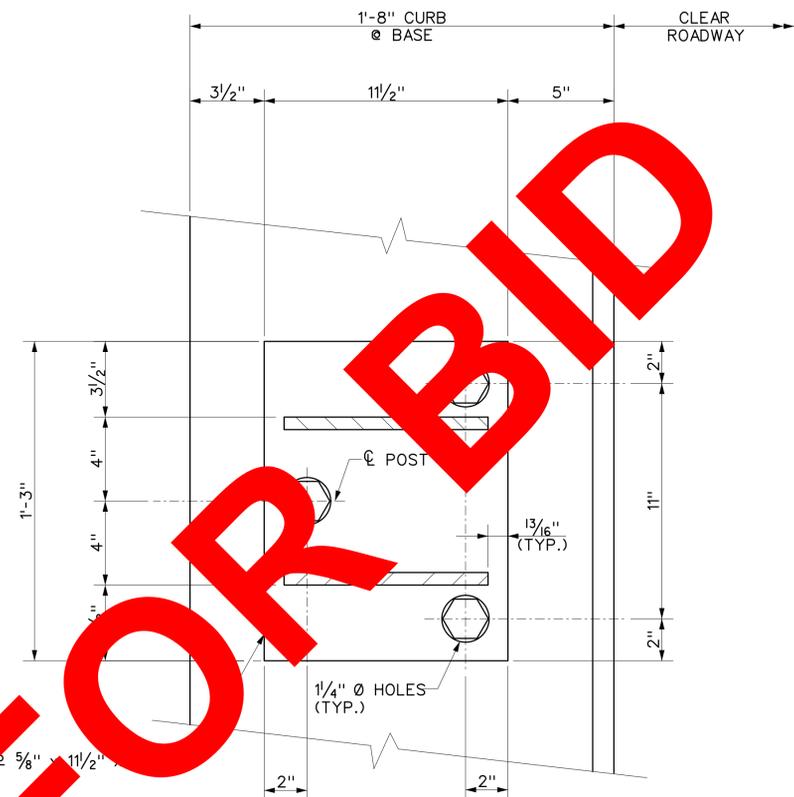
DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	AS NOTED
SHEET NO.:	<b>SD-1</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



4/19/2017 10:58:00 AM \\hserv01\2014\2014\14078\_dir\Task 10 - MB\_NVF\Cadd\Contractors\FarmIn\_PaperMill\Plans\set-1\_sdt.dwg pcf

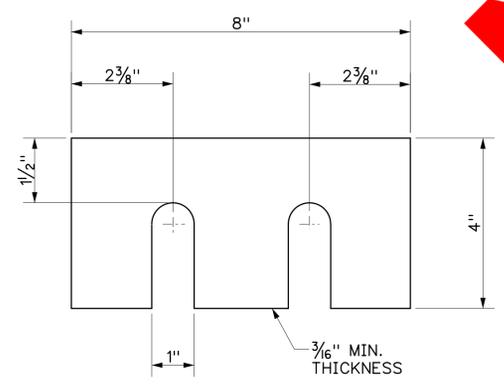


TYPICAL RAIL SECTION ON WINGWALL  
SCALE: 1/2" = 1'-0"

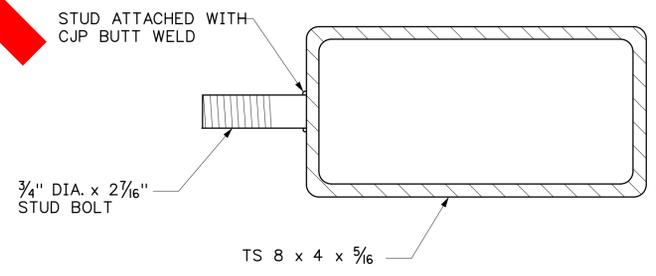


SECTION J-J  
SCALE: 3" = 1'-0"

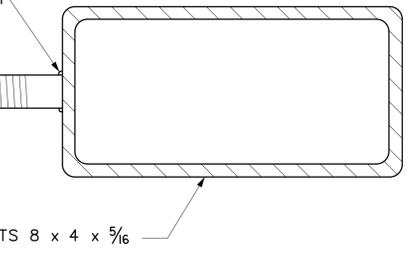
- RAILING NOTES:**
1. THIS RAILING IS MODELLED ON THE CALIFORNIA ST-10 BRIDGE RAIL.
  2. ANCHOR BOLTS MAY BE TACK WELDED (SHOP OR FIELD) TO ANCHORAGE.
  3. ALL ROUGH EDGES ON POSTS AND RAILS SHALL BE GROUND SMOOTH.
  4. THE ALTERNATIVE WELDED SPLICE MAY BE USED IN LIEU OF THE STANDARD SPLICE.
  5. EACH RAIL LENGTH SHALL BE CONTINUOUS OVER A MINIMUM OF TWO POST.
  6. THE CONTRACTOR SHALL CHECK THAT THE TUBULAR SLEEVES SPLICES CONFORM TO THE DIMENSIONS INDICATED TO ASSURE PROPER CLEARANCE.
  7. EXCEPT FOR EXPANSION SPLICES, NOT MORE THAN ONE SPLICE SHALL BE PERMITTED PER SAME SIDE OF POST.



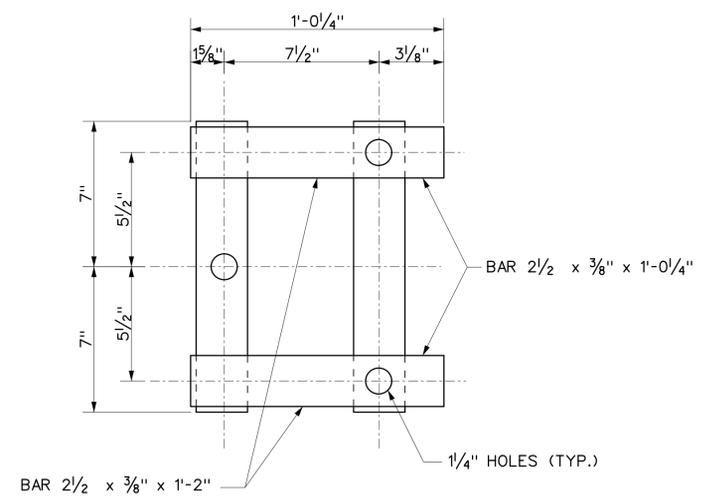
SHIMS REQUIRED FOR TOP AND BOTTOM RAIL



STUD BOLT DETAIL  
SCALE: 6" = 1'-0"



SECTION AT BOLT POST



ANCHOR PLATE DETAIL  
SCALE: 3" = 1'-0"

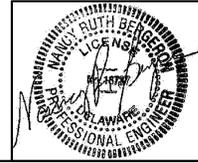
NOT FOR BID

DATE:	DESCRIPTION:
BY:	BY:

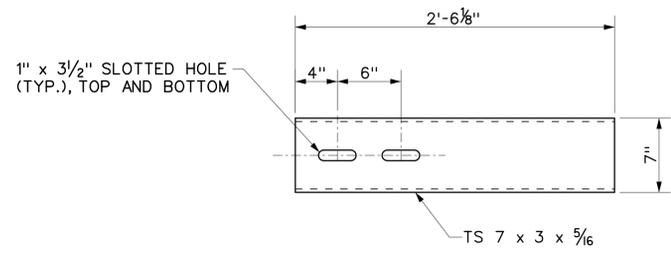
AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
STEEL TUBE RAIL DETAILS - 1



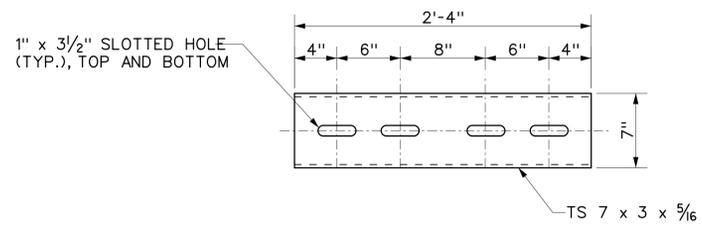
DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	AS NOTED
SHEET NO.:	SD-2
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



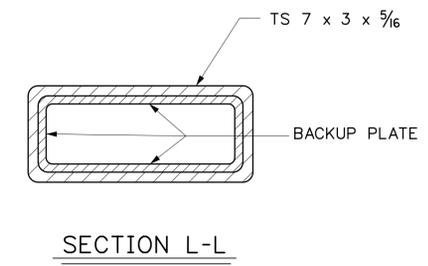
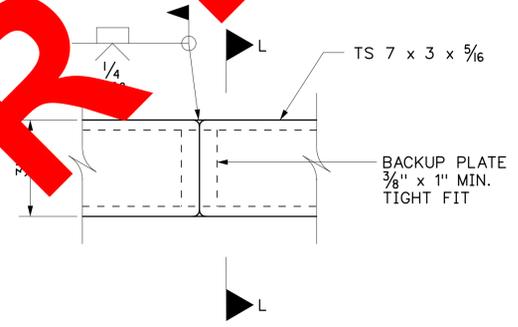
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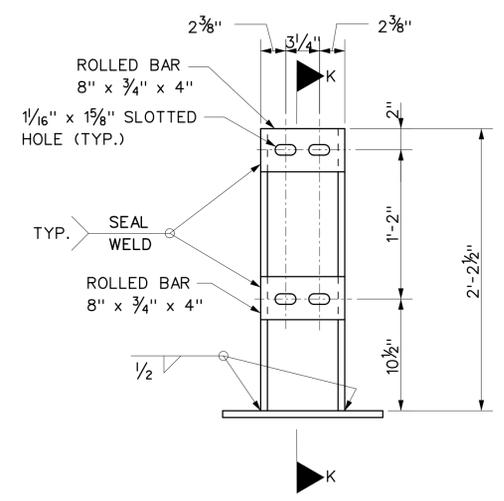
**EXPANSION SLEEVE DETAIL**  
SCALE: 1/2" = 1'-0"



**STANDARD SLEEVE DETAIL**  
SCALE: 1/2" = 1'-0"

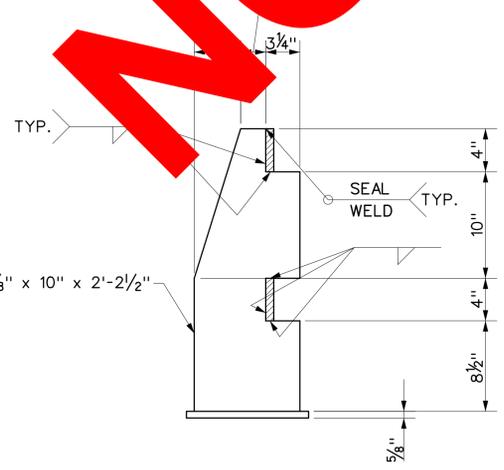


**ALTERNATE TUBE WELDED SPLICE**  
SCALE: 3" = 1'-0"



**ELEVATION**

**POST DETAIL**  
SCALE: 1/2" = 1'-0"



**SECTION K-K**

NOT FOR BID

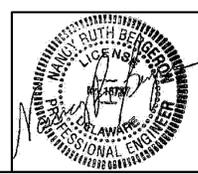
DATE:	DESCRIPTION:	BY:

**AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE**

**STEEL TUBE RAIL DETAILS - 2**



DESIGNED BY:	RKK
DRAWN BY:	RKK
BUILDING NO.:	N/A
DATE:	4/28/2017
SCALE:	AS NOTED
SHEET NO.:	<b>SD-3</b>
PARKS PROJECT #:	NVF-4
CONTRACT #:	2015-NVF-100



4/19/2017 \\balsrv01\2014\2014\14078\_direc\Task 10 - MB\_NVF\Cadd\Contracts\FarmLn\_PaperMill\Plans\sd-3\_sdtl\_chnp.dgn pcf:



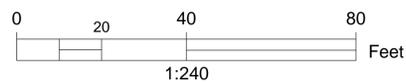
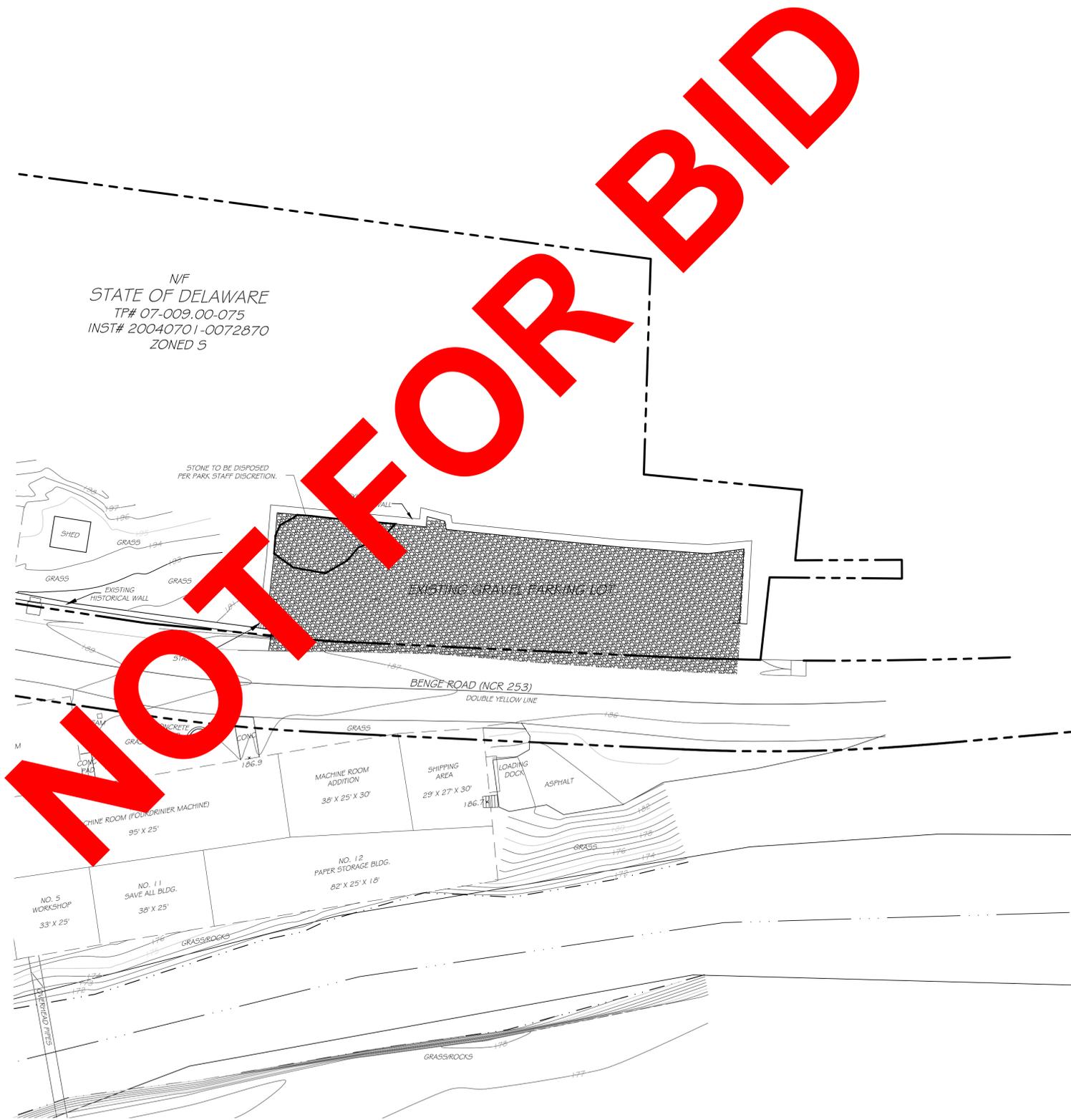








N/F  
 STATE OF DELAWARE  
 TP# 07-009.00-075  
 INST# 20040701-0072870  
 ZONED S



LEGEND - EXISTING

— 45 —	MAJOR CONTOURS
— 46 —	MINOR CONTOURS
— — — —	RIGHT OF WAY
— — — —	BOUNDARY LINE
— — — —	CENTERLINE OF ROAD
— — — —	EDGE OF ROAD
— — — —	EASEMENT LINE
.....	WOODS
⊕	UTILITY POLE
□	MONUMENT
— o — o —	CHAINLINK FENCE
— · — · —	WATER EDGE
— — — —	BUILDING

DATE:	DESCRIPTION:	BY:
DATE:	DESCRIPTION:	BY:

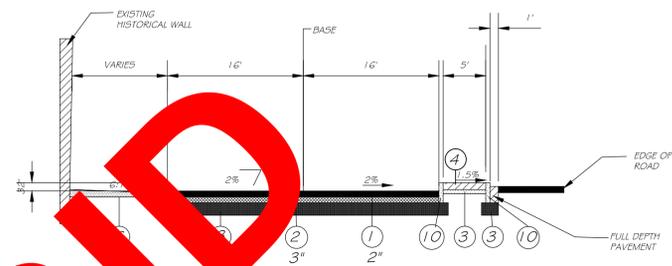
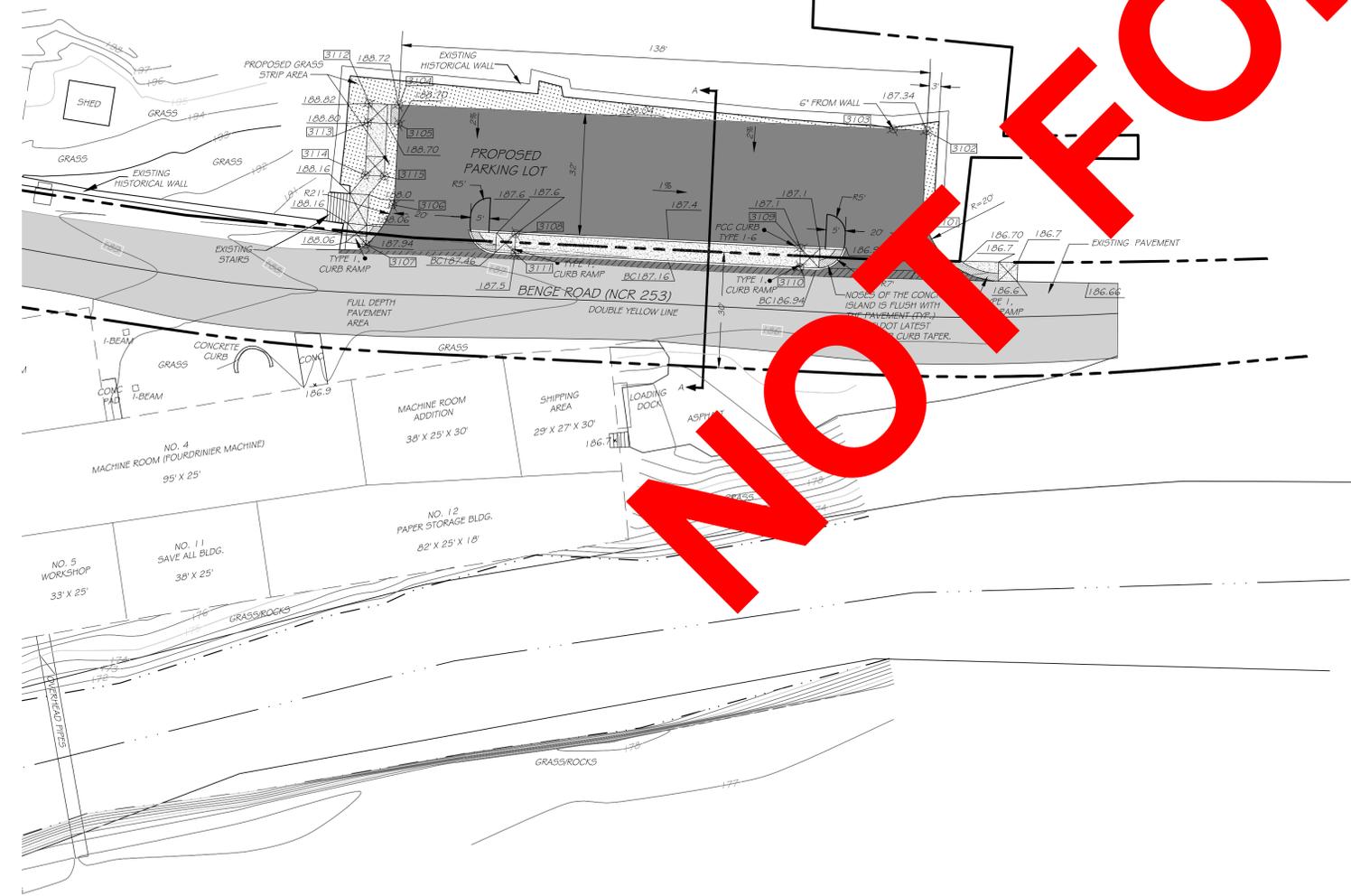
NVF  
 PARKING LOT  
 EXISTING CONDITIONS



DESIGNED BY:	O.D.D.
DRAWN BY:	O.D.D.
BUILDING NO.:	O.D.D.
DATE:	08/23/2016
SCALE:	1" = 20'-0"
SHEET NO.:	P-01
PARKS PROJECT #:	?
CONTRACT #:	?



N/F  
STATE OF DELAWARE  
TP# 07-009.00-075  
INST# 20040701-0072870  
ZONED 5

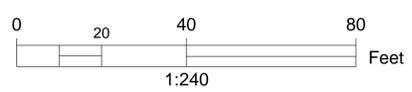


PARKING LOT TYPICAL SECTION  
SCALE: 1" = 10'-0"

- 1 WMA, SUPERPAVE, TYPE C, PG 64-22, 160 GYRATIONS (CARBONATE STONE) (401801)
- 2 WMA, SUPERPAVE, TYPE B PG 64-22, 160 GYRATIONS (401810)
- 3 GRADED AGGREGATE BASE COURSE, TYPE B, GABC (302005)
- 4 4" P.C.C. SIDEWALK
- 5 5" SCORED P.C.C. SIDEWALK
- 6 DELDOT BORROW TYPE F, OR ON-SITE EXCAVATED MATERIAL MEETING THE REQUIREMENT OF BORROW TYPE F
- 7 6" TOPSOIL, SEED MIX TYPE 6 & STRAW MULCH (EXISTING GROUND SHALL BE DISCED OR ROTOTILLED BEFORE PLACING TOPSOIL)
- 8 6" TOPSOIL, SEED MIX TYPE 10 (EXISTING GROUND SHALL BE DISCED OR ROTOTILLED BEFORE PLACING TOPSOIL)
- 9 SOIL STABILIZATION MATTING
- 10 P.C.C. CURB TYPE 1-6 (SEE PLANS)

NOTE: 1.25" LIFT OF TYPE C WWA TO BE INSTALLED WITH TYPE B WWM AND GABC. TOP LIFT OF TYPE C WWA TO BE INSTALLED JUST PRIOR TO DELDOT ACCEPTANCE

STAKEOUT DATA			
Point No.	Northing	Easting	Elevation
3101	658751.1090	582373.9896	186.90
3102	658762.9763	582354.5741	187.34
3103	658755.6221	582349.8331	187.34
3104	658646.8487	582279.7099	188.72
3105	658644.2803	582284.0031	188.70
3106	658632.5148	582301.4029	188.00
3107	658621.2722	582306.8715	187.97
3108	658656.5462	582324.0349	187.60
3109	658719.2297	582364.4452	187.10
3110	658716.5167	582368.6452	186.94
3111	658653.8370	582328.2373	187.50
3112	658640.2657	582275.4660	188.82
3113	658637.5565	582279.6684	188.80
3114	658630.1217	582291.2010	188.50
3115	658634.3241	582293.9102	188.45



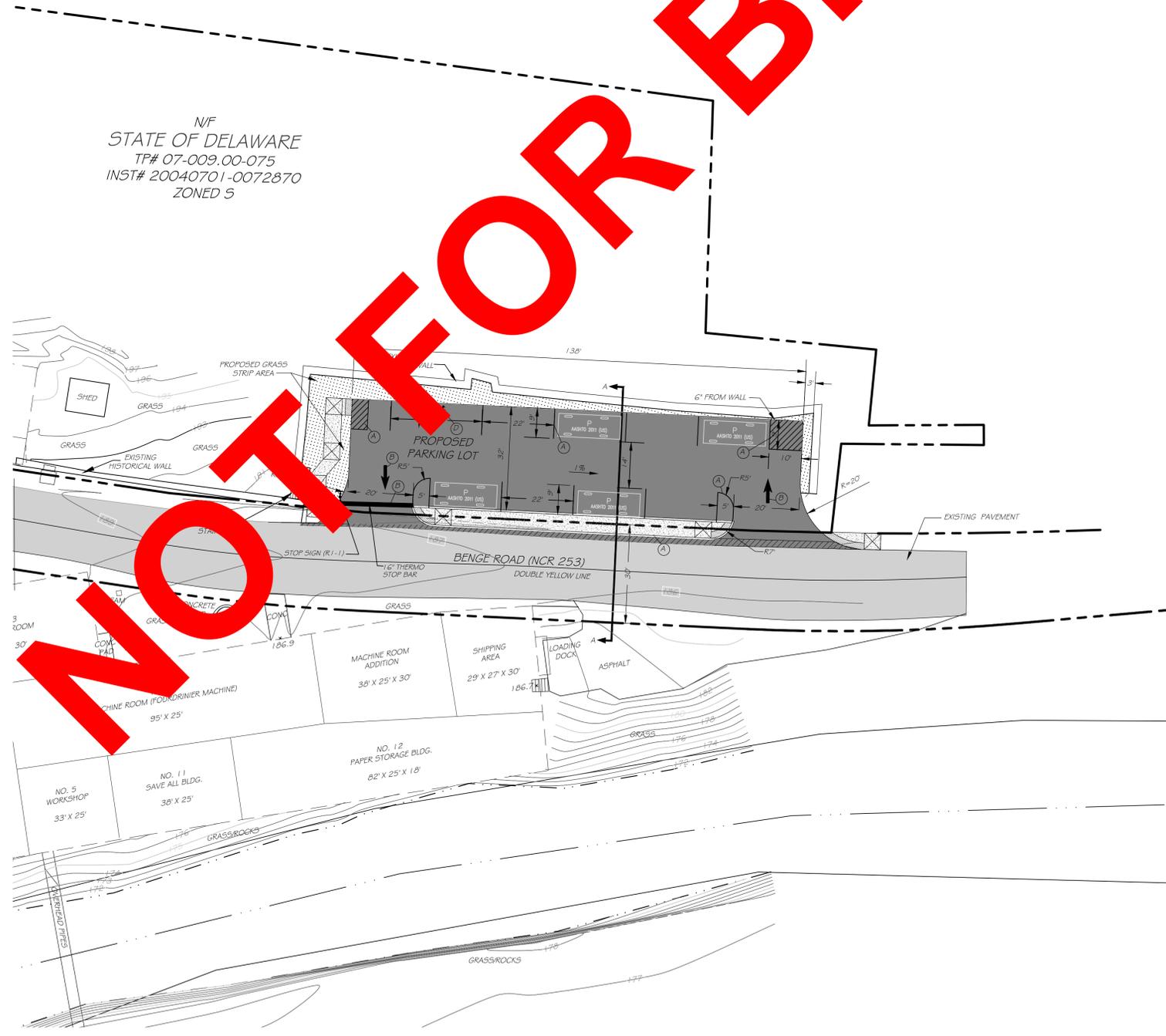
- LEGEND - EXISTING
- 45 --- MAJOR CONTOURS
  - 46 --- MINOR CONTOURS
  - --- RIGHT OF WAY
  - --- BOUNDARY LINE
  - --- CENTERLINE OF ROAD
  - --- EDGE OF ROAD
  - --- EASEMENT LINE
  - --- WOODS
  - UTILITY POLE
  - MONUMENT
  - ○ ○ ○ CHAINLINK FENCE
  - --- WATER EDGE
  - --- BUILDING

NOT FOR BID

BY:		DESCRIPTION:			
DATE:	1/25/17	REVISION DATE:			
N/F PARKING LOT			PROPOSED CONDITIONS		
DESIGNED BY:					
O.D.D.					
DRAWN BY:					
O.D.D.					
BUILDING NO.:					
O.D.D.					
DATE:					
08/23/2016					
SCALE:					
1" = 20'-0"					
SHEET NO.:					
P-02					
PARKS PROJECT #:					
?					
CONTRACT #:					
?					

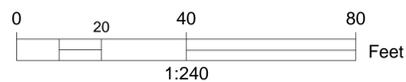


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 STATE OF DELAWARE  
 TP# 07-009.00-075  
 INST# 20040701-0072870  
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NOT FOR BID

PAVEMENT MARKINGS LEGEND	
SYMBOL	ITEM
(A)	5" SOLID WHITE EPOXY RESIN PAVEMENT STRIPING (ITEM 748506)
(B)	16" SOLID WHITE WHITE ALKYD THERMOPLASTIC PAVEMENT STRIPING (ITEM 748015)
(C)	24" SOLID WHITE WHITE ALKYD THERMOPLASTIC PAVEMENT STRIPING (ITEM 748015)
(D)	5" SOLID BLUE EPOXY RESIN PAVEMENT STRIPING (ITEM 748506)
(E)	5"-6"-5" SOLID DOUDLE YELLOW EPOXY RESIN PAVEMENT STRIPING (ITEM 748506)



DATE:	DESCRIPTION:	BY:
1/11/17	CHANGED SITE PLAN	P.P.&D.
1/25/17	REVISION DATE	P.P.&D.

**NVF  
 PARKING LOT  
 STRIPING PLAN**



DESIGNED BY:	O.D.D.
DRAWN BY:	O.D.D.
BUILDING NO.:	O.D.D.
DATE:	08/23/2016
SCALE:	1"=20'-0"
SHEET NO.:	<b>P-03</b>
PARKS PROJECT #:	?
CONTRACT #:	?