CIRCULAR CURVE NO. (13)

	STATION	NORTHING	EASTING
PC (10005)	203+56.27	546535.4667	577140.3587
PI (10204)	203+82.03	546510.1319	577135.6813
CC (10205)		546551.8065	577051.8544
PT (10006)	204+06.45	546491.1096	577118.3065

Radius: 90.0000
Delta: 31° 56′ 53.1225″ Right
Degree of Curvature(Arc): 63° 39′ 43.1181″
Length: 50.1839
Tangent: 25.7630
Chord: 49.5363
Middle Ordinate: 3.4752
External: 3.6148
Tangent Direction: S 10° 27′ 36.8296″ W
Radial Direction: N 79° 32′ 23.1704″ W
Chord Direction: S 26° 26′ 03.3908″ W
Radial Direction: N 47° 35′ 30.0479″ W
Tangent Direction: S 42° 24′ 29.9521″ W

CIRCULAR CURVE NO. (12)

	STATION	NORTHING	EASTING
PC (10003)	202+14.80	546643.0944	577217.1273
PI (10202)	202+77.13	546626.2568	577157.1204
CC (10203)		546546.8129	577244.1434
PT (10004)	203+26.27	546564.9682	577145.8053

Radius: 100.0000
Delta: 63° 51′ 57.3689″ Left
Degree of Curvature(Arc): 57° 17′ 44.8062″
Length: 111.4671
Tangent: 62.3244
Chord: 105.7853
Middle Ordinate: 15.1333
External: 17.8318
Tangent Direction: S 74° 19′ 34.1985″ W
Radial Direction: N 15° 40′ 25.8015″ W
Chord Direction: S 42° 23′ 35.5140″ W
Radial Direction: N 79° 32′ 23.1704″ W
Tangent Direction: S 10° 27′ 36.8296″ W

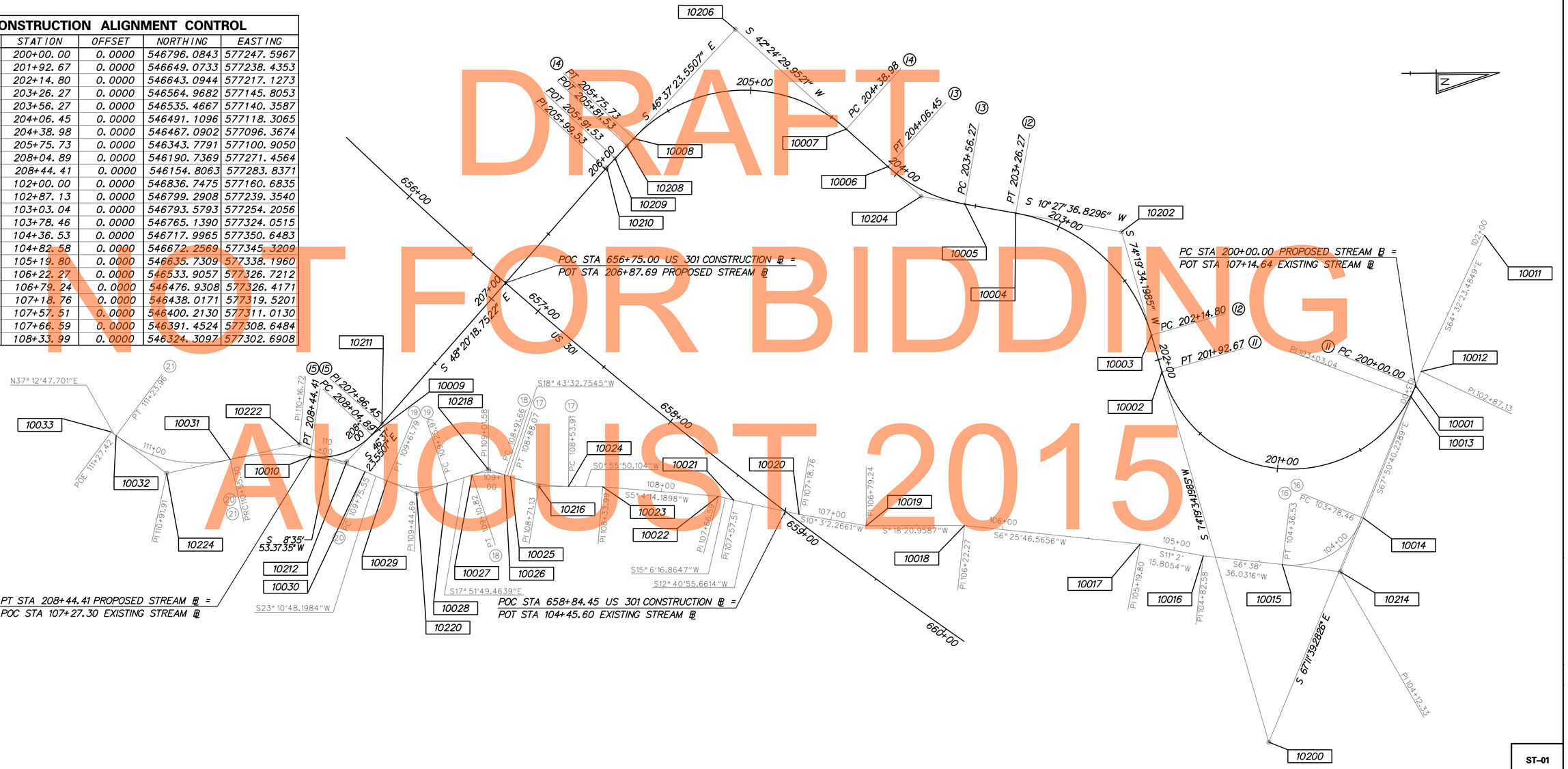
CIRCULAR CURVE NO. (11)

	STATION	NORTHING	EASTING
PC (10001)	200+00.00	546796.0843	577247.5967
PI (10200)	202+23.50	546709.4541	577453.6240
CC (10201)		546724.1775	577217.3614
PT (10002)	201+92.67	546649.0733	577238.4353

Radius: 78.0048
Delta: 141° 31′ 13.4811″ Right
Degree of Curvature(Arc): 73° 27′ 05.6356″
Length: 192.6717
Tangent: 223.4995
Chord: 147.2962
Middle Ordinate: 52.3005
External: 158.7160
Tangent Direction: S 67° 11′ 39.2826″ E
Radial Direction: S 22° 48′ 20.7174″ W
Chord Direction: S 3° 33′ 57.4579″ W
Radial Direction: N 15° 40′ 25.8015″ W
Tangent Direction: S 74° 19′ 34.1985″ W

CONSTRUCTION ALIGNMENT CONTROL

POINT	STATION	OFFSET	NORTHING	EASTING
10001	200+00.00	0.0000	546796.0843	577247.5967
10002	201+92.67	0.0000	546649.0733	577238.4353
10003	202+14.80	0.0000	546643.0944	577217.1273
10004	203+26.27	0.0000	546564.9682	577145.8053
10005	203+56.27	0.0000	546535.4667	577140.3587
10006	204+06.45	0.0000	546491.1096	577118.3065
10007	204+38.98	0.0000	546467.0902	577096.3674
10008	205+75.73	0.0000	546343.7791	577100.9050
10009	208+04.89	0.0000	546190.7369	577271.4564
10010	208+44.41	0.0000	546154.8063	577283.8371
10011	102+00.00	0.0000	546836.7475	577160.6835
10012	102+87.13	0.0000	546799.2908	577239.3540
10013	103+03.04	0.0000	546793.5793	577254.2056
10014	103+78.46	0.0000	546765.1390	577324.0515
10015	104+36.53	0.0000	546717.9965	577350.6483
10016	104+82.58	0.0000	546672.2569	577345.3209
10017	105+19.80	0.0000	546635.7309	577338.1960
10018	106+22.27	0.0000	546533.9057	577326.7212
10019	106+79.24	0.0000	546476.9308	577326.4171
10020	107+18.76	0.0000	546438.0171	577319.5201
10021	107+57.51	0.0000	546400.2130	577311.0130
10022	107+66.59	0.0000	546391.4524	577308.6484
10023	108+33.99	0.0000	546324.3097	577302.6908



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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 30 60 90 FEET	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	UNT TO DRAWYER CREEK HORIZONTAL AND VERTICAL CONTROL
				COUNTY NEW CASTLE	DESIGNED BY: MRM	ST-01
					CHECKED BY: DJG	SHEET NO. 134
						TOTAL SHTS. 240

CONSTRUCTION ALIGNMENT CONTROL

POINT	STATION	OFFSET	NORTHING	EASTING
10024	108+53.91	0.0000	546304.3958	577302.3674
10025	108+88.07	0.0000	546270.8681	577296.5591
10026	108+91.66	0.0000	546267.4682	577295.4066
10027	109+10.82	0.0000	546248.6344	577295.2650
10028	109+25.97	0.0000	546234.2113	577299.9134
10029	109+61.79	0.0000	546199.1925	577298.2876
10030	109+75.55	0.0000	546186.5417	577292.8707
10031	110+55.30	0.0000	546108.4184	577285.2007
10032	111+23.96	0.0000	546042.3683	577270.8789
10033	111+27.42	0.0000	546039.6149	577268.7880
10200	200+96.34	-158.7160	546709.4541	577453.6240
10202	202+70.54	17.8318	546626.2568	577157.1204
10204	203+81.36	-3.6148	546510.1319	577135.6813
10206	205+07.36	35.4122	546403.2039	577038.0141
10208	205+81.53	0.0000	546339.7923	577105.1244
10209	205+91.53	0.0000	546332.9244	577112.3929
10210	205+99.53	0.0000	546327.4300	577118.2077
10211	207+96.45	0.0000	546196.5361	577265.3190
10212	208+24.65	-5.2693	546176.0093	577287.0431
10214	104+07.50	-11.3250	546751.5784	577355.0937
10216	108+70.99	-1.3398	546287.1773	577302.0877
10218	109+01.24	1.5971	546258.0748	577292.2224
10220	109+43.88	-3.3881	546216.3977	577305.6546
10222	110+15.43	6.3636	546148.6945	577276.6649
10224	110+89.63	-7.9786	546071.5239	577293.0198

CIRCULAR CURVE NO. (15)

	STATION	NORTHING	EASTING
PC (10009)	208+04.89	546190.7369	577271.4564
PI (10212)	208+26.33	546176.0093	577287.0431
CC (10213)		546160.9360	577243.2979
PT (10010)	208+44.41	546154.8063	577283.8371

Radius: 41.0000
Delta: 55° 13′ 16.9242″ Right
Degree of Curvature(Arc): 139° 44′ 44.8933″
Length: 39.5156
Tangent: 21.4440
Chord: 38.0038
Middle Ordinate: 4.6692
External: 5.2693
Tangent Direction: S 46° 37′ 23.5507″ E
Radial Direction: S 43° 22′ 36.4493″ W
Chord Direction: S 19° 00′ 45.0886″ E
Radial Direction: N 81° 24′ 06.6265″ W
Tangent Direction: S 8° 35′ 53.3735″ W

CIRCULAR CURVE NO. (14)

	STATION	NORTHING	EASTING
PC (10007)	204+38.98	546467.0902	577096.3674
PI (10206)	205+25.51	546403.2039	577038.0141
CC (10207)		546407.7422	577161.3428
PT (10008)	205+75.73	546343.7791	577100.9050

Radius: 88.0000
Delta: 89° 01′ 53.5028″ Left
Degree of Curvature(Arc): 65° 06′ 31.8253″
Length: 136.7426
Tangent: 86.5250
Chord: 123.3946
Middle Ordinate: 25.2509
External: 35.4122
Tangent Direction: S 42° 24′ 29.9521″ W
Radial Direction: N 47° 35′ 30.0479″ W
Chord Direction: S 2° 06′ 26.7993″ E
Radial Direction: S 43° 22′ 36.4493″ W
Tangent Direction: S 46° 37′ 23.5507″ E

CIRCULAR CURVE NO. (18)

	STATION	NORTHING	EASTING
PC (10026)	108+91.66	546267.4682	577295.4066
PI (10218)	109+01.58	546258.0748	577292.2224
CC (10219)		546257.8371	577323.8186
PT (10027)	109+10.82	546248.6344	577295.2650

Radius: 30.0000
Delta: 36° 35′ 22.2184″ Left
Degree of Curvature(Arc): 190° 59′ 09.3542″
Length: 19.1582
Tangent: 9.9185
Chord: 18.8343
Middle Ordinate: 1.5164
External: 1.5971
Tangent Direction: S 18° 43′ 32.7545″ W
Radial Direction: N 71° 16′ 27.2455″ W
Chord Direction: S 0° 25′ 51.6453″ W
Radial Direction: S 72° 08′ 10.3361″ W
Tangent Direction: S 17° 51′ 49.4639″ E

CIRCULAR CURVE NO. (17)

	STATION	NORTHING	EASTING
PC (10024)	108+53.91	546304.3958	577302.3674
PI (10216)	108+71.13	546287.1773	577302.0877
CC (10217)		546306.1824	577192.3819
PT (10025)	108+88.07	546270.8681	577296.5591

Radius: 110.0000
Delta: 17° 47′ 42.6505″ Right
Degree of Curvature(Arc): 52° 05′ 13.4602″
Length: 34.1643
Tangent: 17.2208
Chord: 34.0271
Middle Ordinate: 1.3237
External: 1.3398
Tangent Direction: S 0° 55′ 50.1040″ W
Radial Direction: N 89° 04′ 09.8960″ W
Chord Direction: S 9° 49′ 41.4293″ W
Radial Direction: N 71° 16′ 27.2455″ W
Tangent Direction: S 18° 43′ 32.7545″ W

CIRCULAR CURVE NO. (16)

	STATION	NORTHING	EASTING
PC (10014)	103+78.46	546765.1390	577324.0515
PI (10214)	104+12.33	546751.5784	577355.0937
CC (10215)		546723.9019	577306.0374
PT (10015)	104+36.53	546717.9965	577350.6483

Radius: 45.0000
Delta: 73° 56′ 34.7206″ Right
Degree of Curvature(Arc): 127° 19′ 26.2361″
Length: 58.0747
Tangent: 33.8748
Chord: 54.1276
Middle Ordinate: 9.0479
External: 11.3250
Tangent Direction: S 66° 24′ 07.9727″ E
Radial Direction: S 23° 35′ 52.0273″ W
Chord Direction: S 29° 25′ 50.6123″ E
Radial Direction: N 82° 27′ 33.2520″ W
Tangent Direction: S 7° 32′ 26.7480″ W

CIRCULAR CURVE NO. (21)

	STATION	NORTHING	EASTING
PRC (10031)	110+55.30	546107.3376	577285.4298
PI (10224)	110+91.91	546071.5239	577293.0198
CC (10225)		546090.7514	577207.1680
PT (10032)	111+23.96	546042.3688	577270.8793

Radius: 80.0000
Delta: 49° 10′ 44.3719″ Right
Degree of Curvature(Arc): 71° 37′ 11.0078″
Length: 68.6668
Tangent: 36.6091
Chord: 66.5783
Middle Ordinate: 7.2550
External: 7.9786
Tangent Direction: S 11° 57′ 56.6710″ E
Radial Direction: S 78° 02′ 03.3290″ W
Chord Direction: S 12° 37′ 25.5150″ W
Radial Direction: N 52° 47′ 12.2990″ W
Tangent Direction: S 37° 12′ 47.7010″ W

CIRCULAR CURVE NO. (20)

	STATION	NORTHING	EASTING
PC (10030)	109+75.55	546186.5417	577292.8706
PI (10222)	110+16.72	546148.6945	577276.6649
CC (10223)		546135.3708	577412.3761
PRC (10031)	110+55.30	546108.4184	577285.2007

Radius: 130.0000
Delta: 35° 08′ 44.8694″ Left
Degree of Curvature(Arc): 44° 04′ 25.2356″
Length: 79.7433
Tangent: 41.1708
Chord: 78.4989
Middle Ordinate: 6.0666
External: 6.3636
Tangent Direction: S 23° 10′ 48.1984″ W
Radial Direction: N 66° 49′ 11.8016″ W
Chord Direction: S 5° 36′ 25.7637″ W
Radial Direction: S 78° 02′ 03.3290″ W
Tangent Direction: S 11° 57′ 56.6710″ E

CIRCULAR CURVE NO. (19)

	STATION	NORTHING	EASTING
PC (10028)	109+25.97	546234.2113	577299.9134
PI (10220)	109+44.69	546216.3977	577305.6546
CC (10221)		546218.8736	577252.3240
PT (10029)	109+61.79	546199.1925	577298.2876

Radius: 50.0000
Delta: 41° 02′ 37.6623″ Right
Degree of Curvature(Arc): 114° 35′ 29.6125″
Length: 35.8175
Tangent: 18.7160
Chord: 35.0565
Middle Ordinate: 3.1731
External: 3.3881
Tangent Direction: S 17° 51′ 49.4639″ E
Radial Direction: S 72° 08′ 10.5361″ W
Chord Direction: S 2° 39′ 29.3672″ W
Radial Direction: N 66° 49′ 11.8016″ W
Tangent Direction: S 23° 10′ 48.1984″ W

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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

NOT TO SCALE

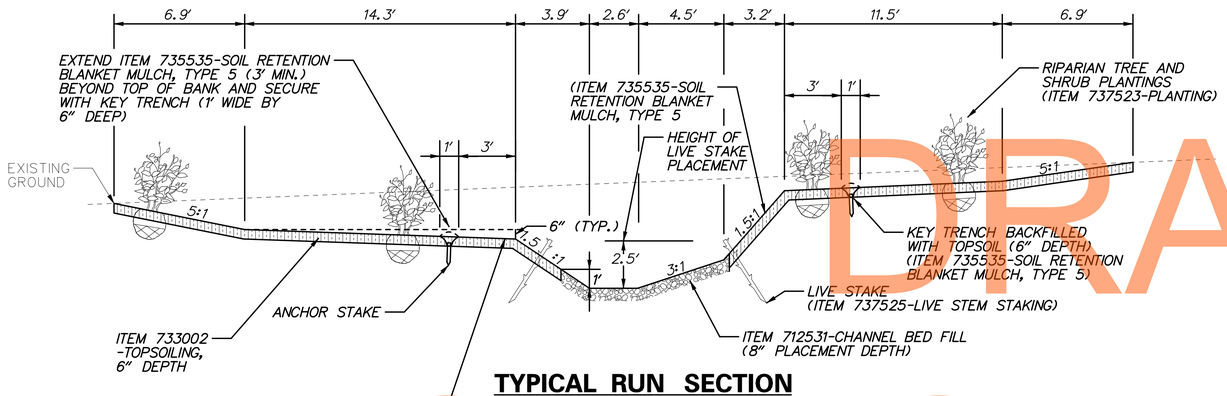
US 301,
NORFOLK SOUTHERN RR TO SR 896

CONTRACT T200911301
COUNTY NEW CASTLE
BRIDGE NO.
DESIGNED BY: MRM
CHECKED BY: DJG

UNT TO DRAWYER CREEK
HORIZONTAL AND
VERTICAL CONTROL

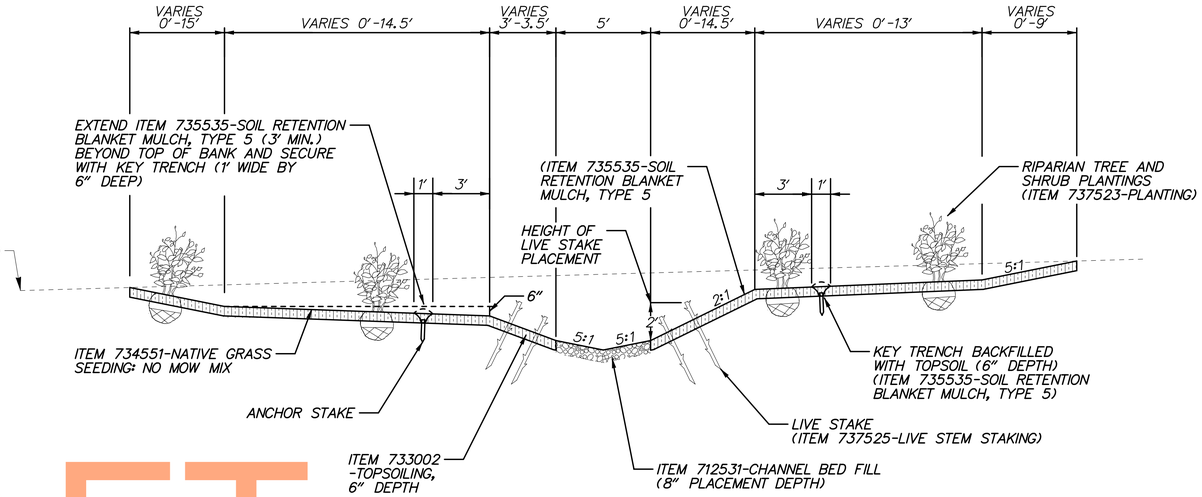
ST-02
SHEET NO. 135
TOTAL SHTS. 240

ITEM 712531-CHANNEL BED FILL	
PARTICLE SIZE CLASS	SIZE (INCHES)
D5	0.05
D15	0.75
D30	1.5
D50	2
D90	4.5
D100	8



TYPICAL RUN SECTION

STA. 203+82



TYPICAL RIFFLE SECTION

STA. 203+27 TO STA. 203+56
STA. 204+07 TO STA. 204+39

NOTES:

1. SEE UNT TO DRAWYER CREEK CROSS SECTIONS FOR DETAILED INFORMATION OF PROPOSED GRADE.

2. THE TYPICAL POOL AND RUN SECTIONS REPRESENT THE PROPOSED CHANNEL GEOMETRY TO BE CONSTRUCTED AT THE SPECIFIED STATIONS. THE PROPOSED POOL/RUN GEOMETRY TRANSITIONS INTO THE CHANNEL GEOMETRY (RIFFLES AND EXISTING) LOCATED UPSTREAM AND DOWNSTREAM OF THE PROPOSED POOL/RUN SECTION. SEE THE UNT TO DRAWYER CREEK CROSS SECTIONS FOR DETAILED DEPICTION OF PROPOSED GRADE AND CROSS SECTIONS REPRESENTING THE CHANNEL TRANSITIONING BETWEEN POOL/RUN SECTIONS AND RIFFLES/EXISTING GEOMETRY.

3. SEE SOIL RETENTION BLANKET MULCH AND BIOENGINEERING STABILIZATION WITH TOE ANCHOR TRENCH DETAIL FOR DETAILS ON HOW TO SECURE THE SOIL RETENTION BLANKET MULCH, TYPE 5 ALONG THE TOP-OF-BANK AND BOTTOM-OF-BANK AREAS.

4. ROCK TOE PROTECTION IS PROPOSED FROM STA. 200+00 TO STA. 201+93, LT; FROM STA. 204+39 TO STA. 205+76, RT; AND FROM STA. 208+20 TO STA. 208+44, LT. SEE UNT TO DRAWYER CREEK CROSS SECTIONS FOR OFFSETS AND ELEVATIONS OF THE TOP OF ROCK TOE PROTECTION FACE.

5. SEE ROCK TOE PROTECTION WITH SOIL RETENTION BLANKET MULCH AND BIOENGINEERING STABILIZATION DETAIL FOR DETAILS ON HOW TO SECURE THE SOIL RETENTION BLANKET MULCH, TYPE 5 ALONG THE TOP-OF-BANK AND BOTTOM-OF-BANK AREAS.

6. FILL ABANDONED LENGTH OF UNT TO DRAWYER CREEK BY EXCAVATING A MINIMUM DEPTH OF 2′ ALONG THE PERIMETER OF THE EXISTING CHANNEL AND BACKFILL WITH ITEM 209002 - BORROW, TYPE B. BACKFILL REMAINING EXISTING CHANNEL AREA WITH ITEM 209006 - BORROW, TYPE F.

7. DIVERT STREAM FLOW INTO THE NEWLY CONSTRUCTED CHANNEL AND PIPE UPON COMPLETION AND STABILIZATION OF ALL PROPOSED WORK AND FOLLOWING APPROVAL BY THE ENGINEER. IMMEDIATELY STABILIZE ANY DISTURBANCE RESULTING FROM THE REMOVAL OF TEMPORARY SEDIMENT AND EROSION CONTROL PRACTICES.

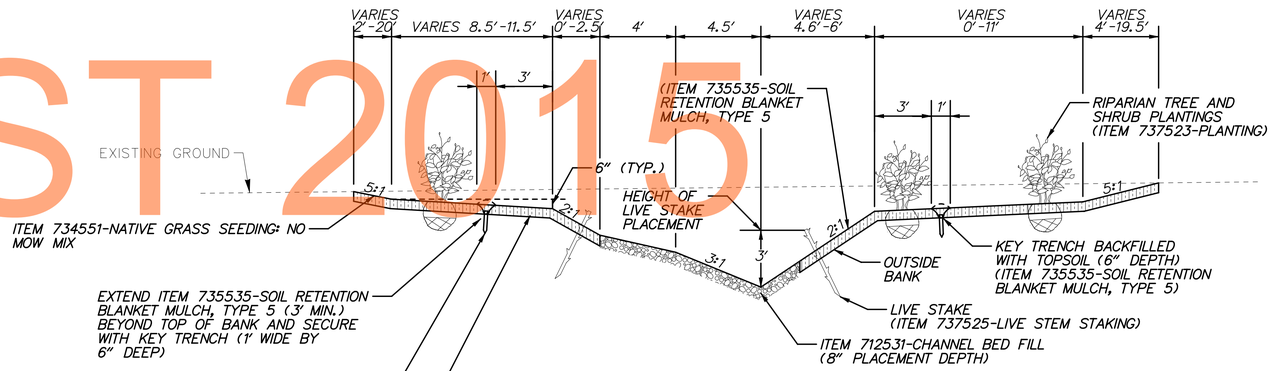
8. THE DEPARTMENT WILL PROVIDE A STREAM RESTORATION SPECIALIST TO CONDUCT GENERAL CONSTRUCTION OVERSIGHT DURING CRITICAL PHASES OF CONSTRUCTION INVOLVING THE STREAM GRADING ALONG THE UNNAMED TRIBUTARY TO DRAWYER CREEK. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE ENGINEER AND HIS STREAM RESTORATION SPECIALIST A MINIMUM OF TWO WEEKS PRIOR TO BEGINNING WORK IN THE UNNAMED TRIBUTARY TO DRAWYER CREEK.

9. PRIOR TO PERFORMING ANY WORK ALONG THE STREAM REALIGNMENT OF THE UNNAMED TRIBUTARY TO DRAWYER CREEK, THE CONTRACTOR SHALL PERFORM SUFFICIENT FIELD SURVEYS TO VERIFY THE PRECONSTRUCTION GROUND SURFACE WITHIN THE GRADING LIMITS OF THE STREAM REALIGNMENT. THE CONTRACTOR IS REQUIRED TO COORDINATE RESULTS OF THE SURVEY WITH THE ENGINEER AND HIS STREAM RESTORATION SPECIALIST A MINIMUM OF TWO WEEKS PRIOR TO BEGINNING WORK IN THE UNNAMED TRIBUTARY TO DRAWYER CREEK. THIS WORK IS INCIDENTAL TO ITEM 763501 - CONSTRUCTION ENGINEERING.

10. ANY TOPSOIL BEING PLACED IN ACCORDANCE WITH THE UNT TO DRAWYER CREEK STREAM RESTORATION PLANS, INCLUDING ITEM 733002-TOPSOILING, 6″ DEPTH, SHALL HAVE A MINIMUM ORGANIC MATTER CONTENT OF 10% IN ACCORDANCE WITH AASHTO T194. NO ADDITIONAL PAYMENT WILL BE MADE FOR ACTIONS NECESSARY TO MEET THIS REQUIREMENT.

11. SOW ITEM 734551-NATIVE GRASS SEEDING: NO MOW MIX INTO TOPSOIL PRIOR TO INSTALLING ITEM 735535-SOIL RETENTION BLANKET MULCH, TYPE 5.

12. LOCATION OF THE OUTSIDE BANK ALONG TYPICAL POOL SECTIONS VARIES BETWEEN THE LEFT AND RIGHT BANK (FACING DOWNSTREAM/UPSTREAM). SEE THE CROSS SECTIONS FOR THE LOCATION OF THE OUTSIDE BANK (SHEETS ST-13 TO ST-18).



TYPICAL POOL SECTION

STA. 200+97
STA. 202+71
STA. 205+08

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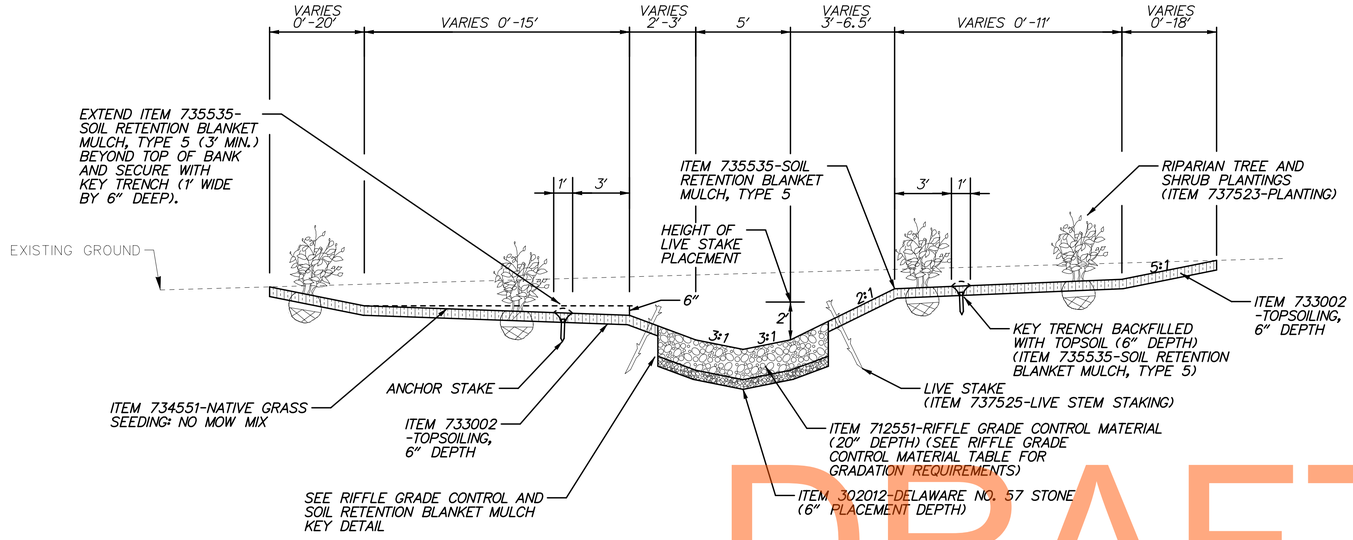
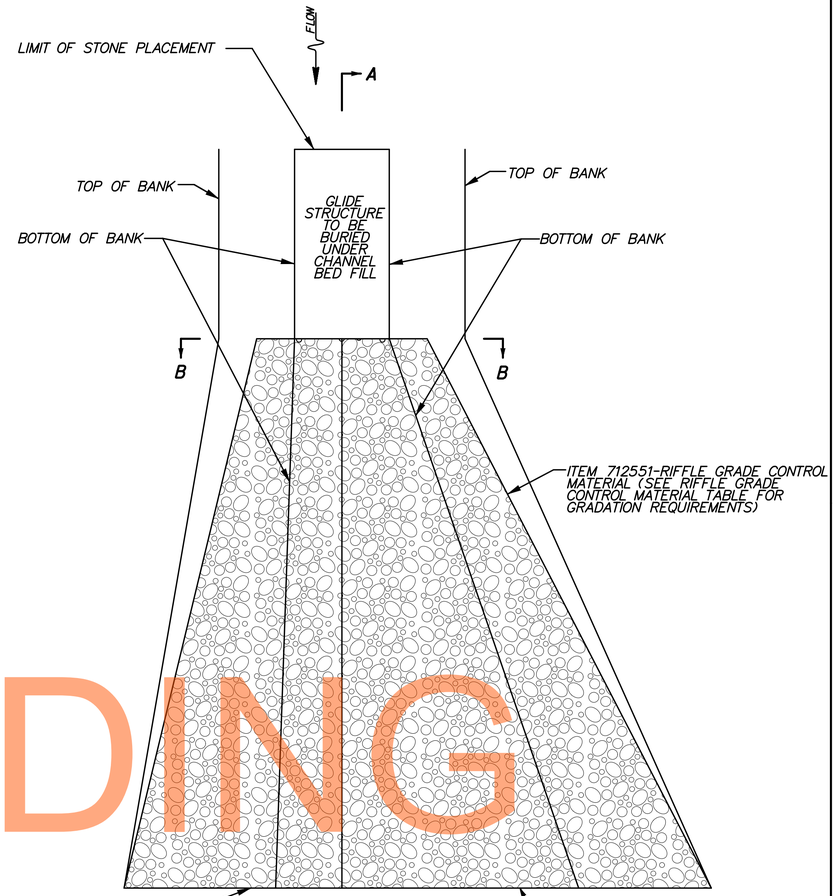
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	STREAM RESTORATION UNT TO DRAWYER CREEK TYPICAL SECTIONS	ST-03
				COUNTY NEW CASTLE	DESIGNED BY: M.R.M.		SHEET NO. 136
					CHECKED BY: D.J.G.		TOTAL SHTS. 240



SECTION 'B-B'
RIFFLE GRADE CONTROL

STA. 205+76
STA. 201+93 TO STA. 202+14 (SEE ST-05)

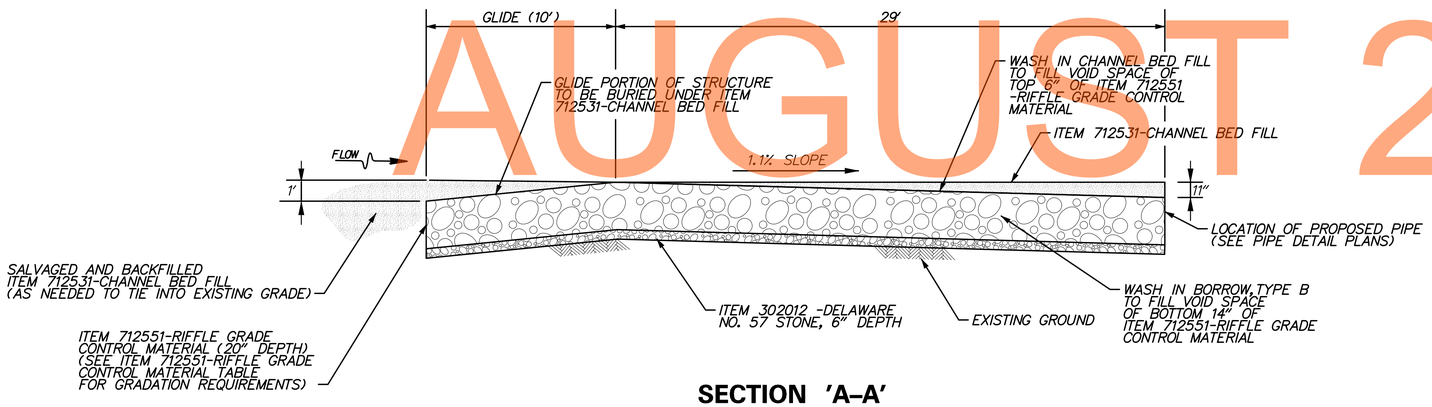


PLAN VIEW
RIFFLE GRADE CONTROL

STA. 205+76 TO STA. 206+05

NOTES:

1. MINIMIZE PROTRUSIONS OF ITEM 712551-RIFFLE GRADE CONTROL MATERIAL ABOVE PROPOSED CHANNNEL GRADE.
2. STATION 206+05 REPRESENTS THE LOCATION OF THE PROPOSED PIPE. THE TYPICAL RIFFLE GEOMETRY WILL TRANSITION INTO THE PROPOSED ROADWAY AND PIPE GRADING AT THIS POINT. SEE THE BR1-444A DETAILS FOR THE PROPOSED CHANNEL GEOMETRY AT THE PROPOSED PIPE INLET.
3. WASH IN BORROW, TYPE B TO FILL VOID SPACE OF BOTTOM 14" OF ITEM 712551-RIFFLE GRADE CONTROL MATERIAL. WASH IN ITEM 712531-CHANNEL BED FILL TO FILL VOID SPACE OF TOP 6" OF ITEM 712551-RIFFLE GRADE CONTROL MATERIAL. PAYMENT OF BORROW TYPE B AND CHANNEL BED FILL WASHED INTO THE VOID SPACE IS INCIDENTAL TO PAYMENT OF ITEM 712551-RIFFLE GRADE CONTROL MATERIAL.
4. CROSS SECTION DIMENSIONS OF THE RIFFLE GRADE CONTROL ARE VARIABLE. SEE UNT TO DRAWYER CREEK CROSS-SECTIONS (SHEETS ST-13 TO ST-18) FOR DIMENSIONS.
5. STATION LIMITS PROVIDED WITHT THE RIFFLE CONTROL DETAILS REPRESENT THE "AT GRADE" PORTION OF THE RIFFLE GRADE CONTROL. ADDITIONAL RIFFLE CONTROL MATERIAL IS PLACED ALONG THE GLIDE AND RUN AREAS, AS SHOWN ON THE DETAILS, UNLESS OTHERWISE NOTED.



SECTION 'A-A'
RIFFLE GRADE CONTROL

STA. 205+76 TO STA. 206+05

ITEM 712551-RIFFLE GRADE CONTROL MATERIAL

PARTICLE SIZE CLASS	SIZE (INCHES)
D5	0.5
D15	1.5
D30	2.0
D50	7.0
D90	12.0
D100	14.0

MEETING THE REQUIREMENTS OF THE RIFFLE GRADE CONTROL MATERIAL CAN BE ACCOMPLISHED BY A MIX CONSISTING OF 60% RIPRAP, R-5, 20% RIPRAP, R-4, AND 20% DELAWARE NO. 1 STONE SHALL CONFORM TO REQUIREMENTS IN SECTION 712.04 AND 813.

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ST-04

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

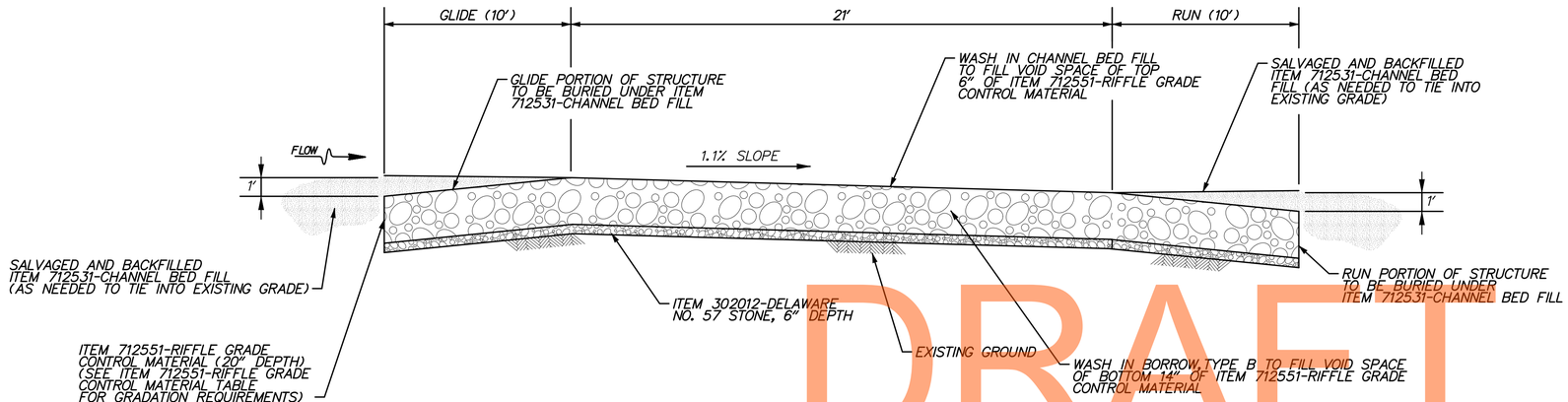
NOT TO SCALE

US 301, NORFOLK SOUTHERN RR TO SR 896

CONTRACT T200911301
COUNTY NEW CASTLE
BRIDGE NO.
DESIGNED BY: M.R.M.
CHECKED BY: D.J.G.

STREAM RESTORATION
UNT TO DRAWYER CREEK
CONSTRUCTION DETAILS

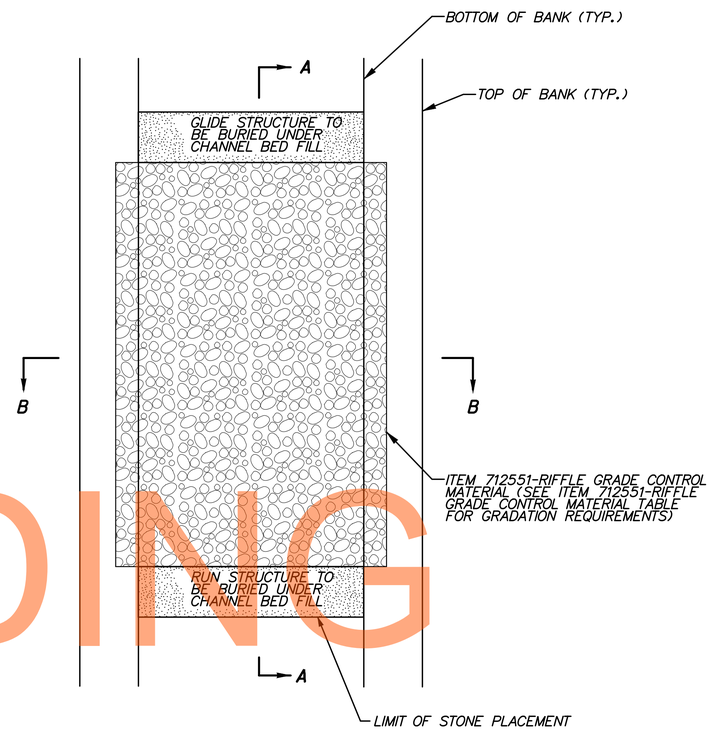
SHEET NO. 137
TOTAL SHTS. 240



SECTION 'A–A'

RIFFLE GRADE CONTROL

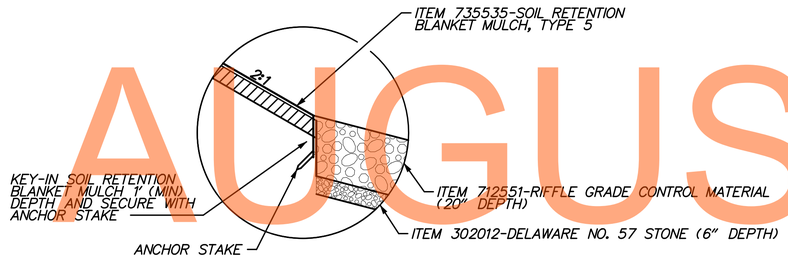
STA. 201+93 TO STA. 202+14



PLAN VIEW

RIFFLE GRADE CONTROL

STA. 201+93 TO STA. 202+14



RIFFLE GRADE CONTROL AND SOIL RETENTION BLANKET MULCH KEY DETAIL

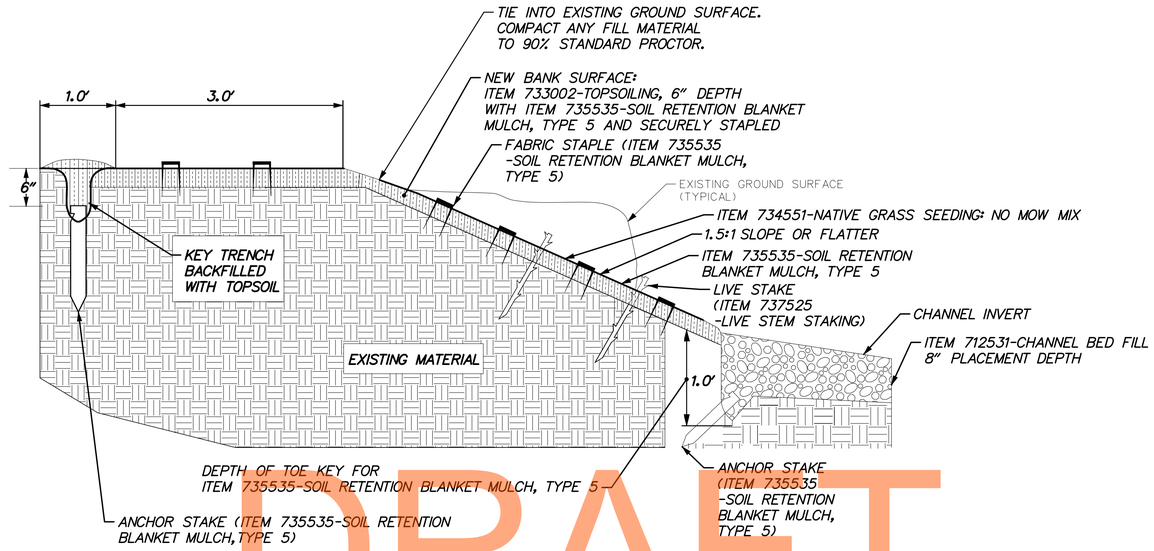
NOTE:

SEE SHEET ST-04 UNT TO DRAWYER CREEK CONSTRUCTION DETAILS FOR SECTION 'B-B' RIFFLE GRADE CONTROL

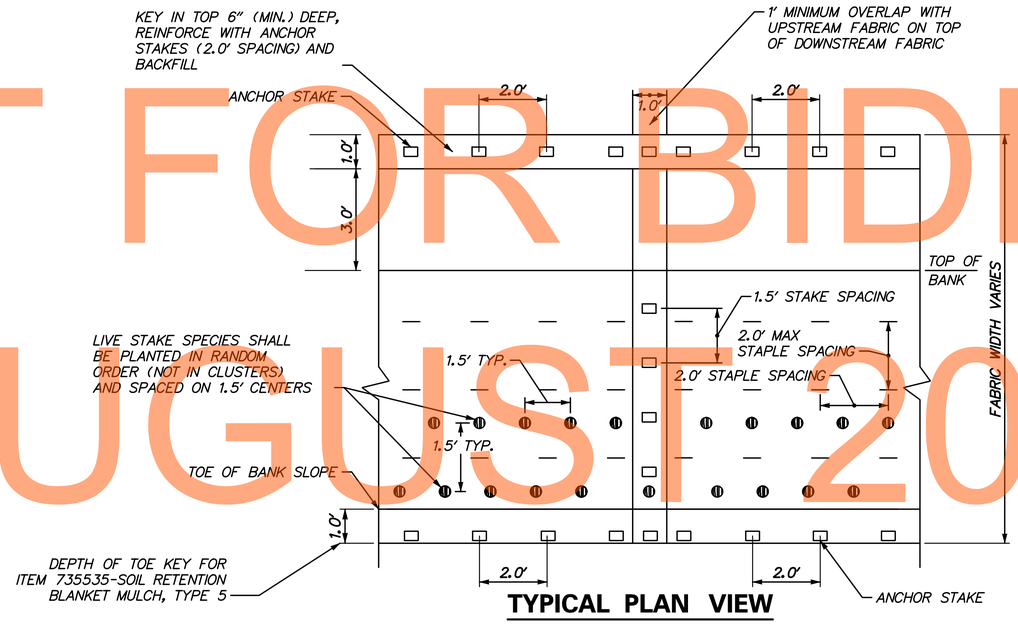
$DATE$

$FILE$

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	STREAM RESTORATION UNT TO DRAWYER CREEK CONSTRUCTION DETAILS	ST-05
				COUNTY NEW CASTLE	DESIGNED BY: M.R.M.		SHEET NO. 138
					CHECKED BY: D.J.G.		TOTAL SHTS. 240



SOIL RETENTION BLANKET MULCH AND BIOENGINEERING STABILIZATION WITH TOE ANCHOR TRENCH



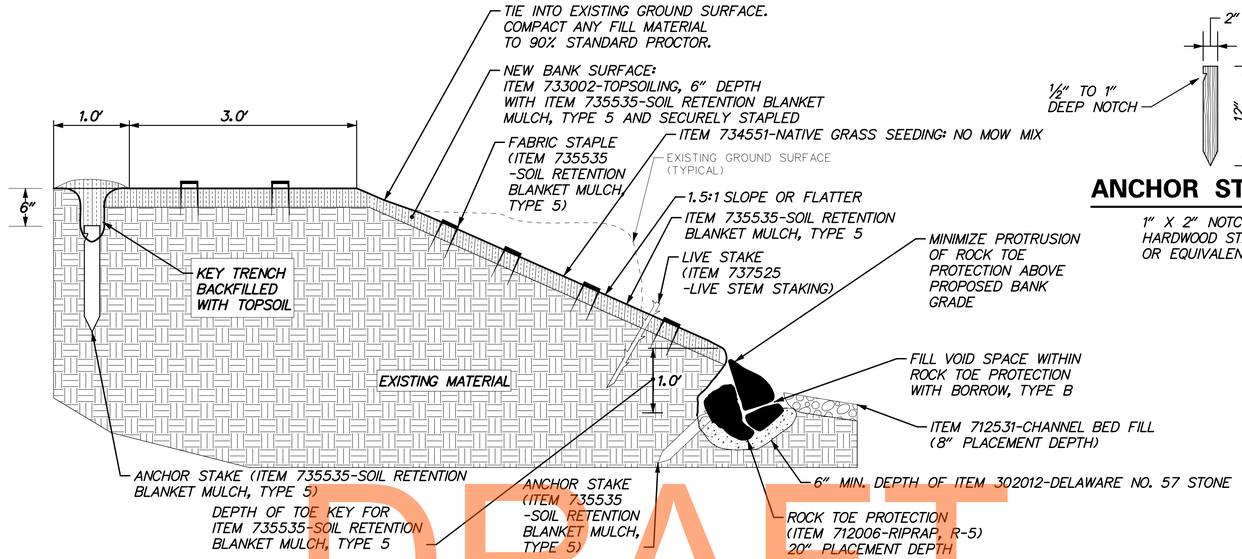
TYPICAL PLAN VIEW

NOTE:
BLANKET MULCH TO BE ROLLED LENGTHWISE ALONG STREAMBANK EXTENDING BELOW THE TOE ANCHOR TRENCH AND A MINIMUM OF 1.0' OVER TOP OF BANK. IF MORE THAN ONE ROLL IS REQUIRED, MID-BANK OVERLAP SHOULD BE A MINIMUM OF 1.0' AND SECURELY FASTENED WITH ANCHOR STAKES. TOP EDGE OF BLANKET MULCH SHALL BE KEYED INTO EXISTING GROUND SURFACE AT A MINIMUM DEPTH OF 6" AND FASTENED W/ANCHOR STAKES SPACED EVERY 2.0'.

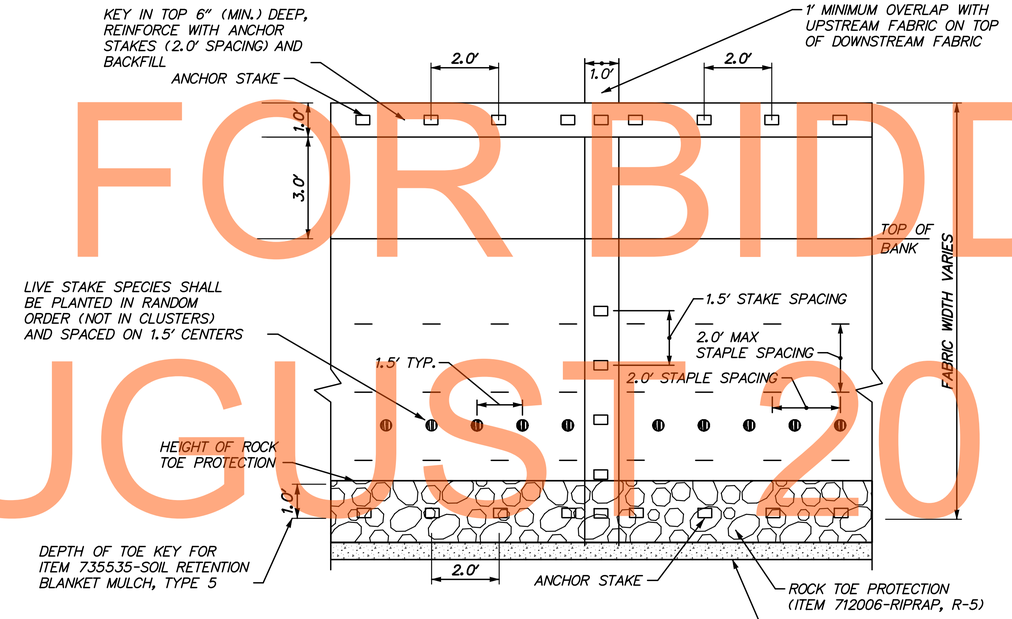
PLAN VIEW OF SOIL RETENTION BLANKET MULCH AND BIOENGINEERING STABILIZATION WITH TOE ANCHOR TRENCH

$DATE$
$FILEA$

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	STREAM RELOCATION UNT TO DRAWYER CREEK CONSTRUCTION DETAILS	ST-06
				COUNTY NEW CASTLE	DESIGNED BY: M.R.M.		SHEET NO. 139
					CHECKED BY: D.R.G.		TOTAL SHTS. 240



ROCK TOE PROTECTION WITH SOIL RETENTION BLANKET MULCH AND BIOENGINEERING STABILIZATION



TYPICAL PLAN VIEW

NOTE:
BLANKET MULCH TO BE ROLLED LENGTHWISE ALONG STREAMBANK EXTENDING BELOW THE TOE ANCHOR TRENCH AND A MINIMUM OF 1.0' OVER TOP OF BANK. IF MORE THAN ONE ROLL IS REQUIRED, MID-BANK OVERLAP SHOULD BE A MINIMUM OF 1.0' AND SECURELY FASTENED WITH ANCHOR STAKES. TOP EDGE OF BLANKET MULCH SHALL BE KEYED INTO EXISTING GROUND SURFACE AT A MINIMUM DEPTH OF 6" AND FASTENED W/ANCHOR STAKES SPACED EVERY 2.0'.

PLAN VIEW OF ROCK TOE PROTECTION WITH SOIL RETENTION BLANKET MULCH AND BIOENGINEERING STABILIZATION

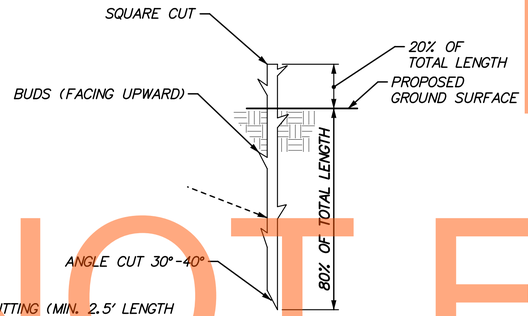
ANCHOR STAKE

1" X 2" NOTCHED HARDWOOD STAKE OR EQUIVALENT

$DATE$

$FILE$

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	STREAM RELOCATION UNT TO DRAWYER CREEK CONSTRUCTION DETAILS	ST-07
				COUNTY NEW CASTLE	DESIGNED BY:		SHEET NO. 140
					CHECKED BY:		TOTAL SHTS. 240



NOTE:
LIVE STAKES SHALL BE INSTALLED WHILE DORMANT (LATE FALL TO EARLY SPRING).

LIVE STAKE

LIVE STAKE NOTES

1. HARVESTING AND INSTALLATION OF LIVE STAKE MATERIALS SHALL TAKE PLACE DURING THE DORMANT PERIOD OF THE YEAR: GENERALLY NOVEMBER 1 THROUGH MARCH 31. IF COMPLETION OF GRADING DOES NOT OCCUR WITHIN THIS WINDOW: THAT IS, IF THE CONTRACTOR HAS NOT COMPLETED HARVESTING AND INSTALLATION ON OR BEFORE MARCH 31, THE CONTRACTOR SHALL WAIT UNTIL THE DORMANT PERIOD THAT BEGINS ON THE FOLLOWING NOVEMBER 1 TO HARVEST AND INSTALL THE REMAINING LIVE STAKES.

2. LIVE STAKE MATERIALS SHALL BE PURCHASED FROM A NURSERY SPECIALIZING IN THE PRODUCTION OF SIMILAR MATERIALS AND SHALL INCLUDE CONFIRMATION OF SPECIES. EACH LIVE STAKE SHALL CONFORM TO THE RANGE OF DIMENSIONS SPECIFIED IN THE DETAIL.

3. LIVE STAKES SHALL BE TRANSPORTED IN CLIMATE-CONTROLLED CONDITIONS TO INSURE AGAINST TEMPERATURES GREATER THAN 50 DEGREES FAHRENHEIT. LIVE STAKES STORED ON SITE SHALL BE KEPT MOIST, SHADED, AND PROTECTED AGAINST DESICCATION. MATERIALS STORED OFFSITE SHALL BE REFRIGERATED AND KEPT MOIST. IN NO CASE SHALL NON-REFRIGERATED MATERIALS BE STORED LONGER THAN FIVE (5) CALENDAR DAYS.

4. DURING INSTALLATION, LIVE STAKES SHALL BE KEPT DAMP BY EITHER COVERING WITH WET BURLAP OR HEELING INTO MOIST MULCH UNTIL READY FOR USE. STAKES SHALL BE INSPECTED FOR SIGNS OF DESICCATION, INCLUDING BUT NOT LIMITED TO BLACKENING OF CUT ENDS AND LENGTHWISE WRINKLING OF BARK, AND ALL UNSUITABLE MATERIALS SHALL BE APPROPRIATELY DISCARDED.

5. THE CONTRACTOR SHALL REMOVE ALL SIDE BRANCHES FROM ALL LIVE STAKES, CLEANLY AND WITHOUT CAUSING DAMAGE TO BARK. BUDS SHALL BE ORIENTED TOWARD THE TOP OF EACH STAKE. WITHIN TWO (2) HOURS PRIOR TO INSTALLATION, USING PRUNING SHEARS OR A POWER SAW, THE CONTRACTOR SHALL CUT EACH STAKE AT AN ANGLE ON THE BOTTOM END AS INDICATED IN THE DETAIL.

6. LIVE STAKES SHALL BE INSTALLED AT APPROXIMATE EIGHTEEN (18)-INCH SPACING THROUGHOUT THE PLANTING ZONE. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR SHALL ACHIEVE SUCH SPACING BY PREPARING HOLES USING A POINTED DIGGING BAR, REBAR, OR OTHER SIMILAR IMPLEMENTS TO ACHIEVE BOTH THE DEPTH AND THE DIAMETER REQUIRED FOR EACH STAKE. LIVE STAKES SHALL BE DRIVEN INTO THE PREPARED HOLE USING A DEAD BLOW HAMMER UNTIL THE STAKE HAS BEEN FIRMLY PLACED AS APPROVED BY THE ENGINEER. DO NOT SPLIT THE LIVE STAKES DURING INSTALLATION. DISCARD AND REPLACE ANY LIVE STAKES THAT SHATTER DURING INSTALLATION.

7. THE CONTRACTOR SHALL FIRMLY BACKFILL ALL VOIDS SURROUNDING ALL LIVE STAKES BY HAND TAMPING THE SOIL TIGHTLY AGAINST EACH STAKE WITHOUT SCARRING THE STAKE.

$DATE$

$FILE$

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301 / COUNTY NEW CASTLE	BRIDGE NO. / DESIGNED BY: M.R.M. / CHECKED BY: D.J.G.	STREAM RESTORATION UNT TO DRAWYER CREEK CONSTRUCTION DETAILS	ST-08 / SHEET NO. 141 / TOTAL SHTS. 240

ROCK TOE PROTECTION	
STATION FROM	STATION TO
200+00, LT	201+93, LT
204+39, RT	205+76, RT

RIFFLE GRADE CONTROL	
STATION FROM	STATION TO
201+93	202+14
205+76	206+05

NOTES:

1. LT AND RT DESIGNATIONS REFER TO LEFT AND RIGHT FACING DOWNSTREAM/UPSTATION.
2. RIFFLE GRADE CONTROL STATION LIMITS REPERSENT THE "AT GRADE" PORTION OF THE RIFFLE GRADE CONTROL. ADDITIONAL RIFFLE GRADE CONTROL MATERIAL IS PLACED ALONG THE GLIDE AND RUN AREAS AS SHOWN ON THE RIFFLE GRADE CONTROL DETAILS (SHEETS ST-04 AND ST-05.

PROPOSED STREAM B STA 200+00.00 =
EXISTING STREAM B STA 107+14.64

US 301 CONSTRUCTION B STA 658+84.45 =
EXISTING STREAM B STA 104+45.60

CHURCHTOWN, LLC
T.M.#13-015.00-006
INS.#20010603-0006812
M.F. #4015

DELMARVA POWER & LIGHT COMPANY
T.M.#13-012.00-057
D.R. S-91-330
M.F. #4015

US 301 SOUTHBOUND

US 301 CONSTRUCTION AND R/W BASELINE

MATCH LINE SHEET ST-10

LEGEND
- ROCK TOE PROTECTION
- RIFFLE GRADE CONTROL

$DATE$
$FILE$

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 20 40 60 FEET	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	STREAM RESTORATION UNT TO DRAWYER CREEK CONSTRUCTION PLAN
				COUNTY NEW CASTLE	DESIGNED BY: M.R.M.	ST-09
					CHECKED BY: D.J.G.	SHEET NO. 142
						TOTAL SHTS. 240

MATCH LINE SHEET ST-10

N

PROPOSED STORMWATER MANAGEMENT FACILITY BMP #711

PROPOSED STORMWATER MANAGEMENT FACILITY BMP #711

DIRT PATH

R1-013

STA. 110+08.64 EXISTING STREAM ALIGNMENT=
STA. 208+44.41 PROPOSED STREAM REALIGNMENT

ROCK TOE PROTECTION	
STATION FROM	STATION TO
208+20, LT	208+44 LT

LEGEND
- ROCK TOE PROTECTION
- RIFFLE GRADE CONTROL

$DATE$

$FILE$

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE
0 20 40 60
FEET

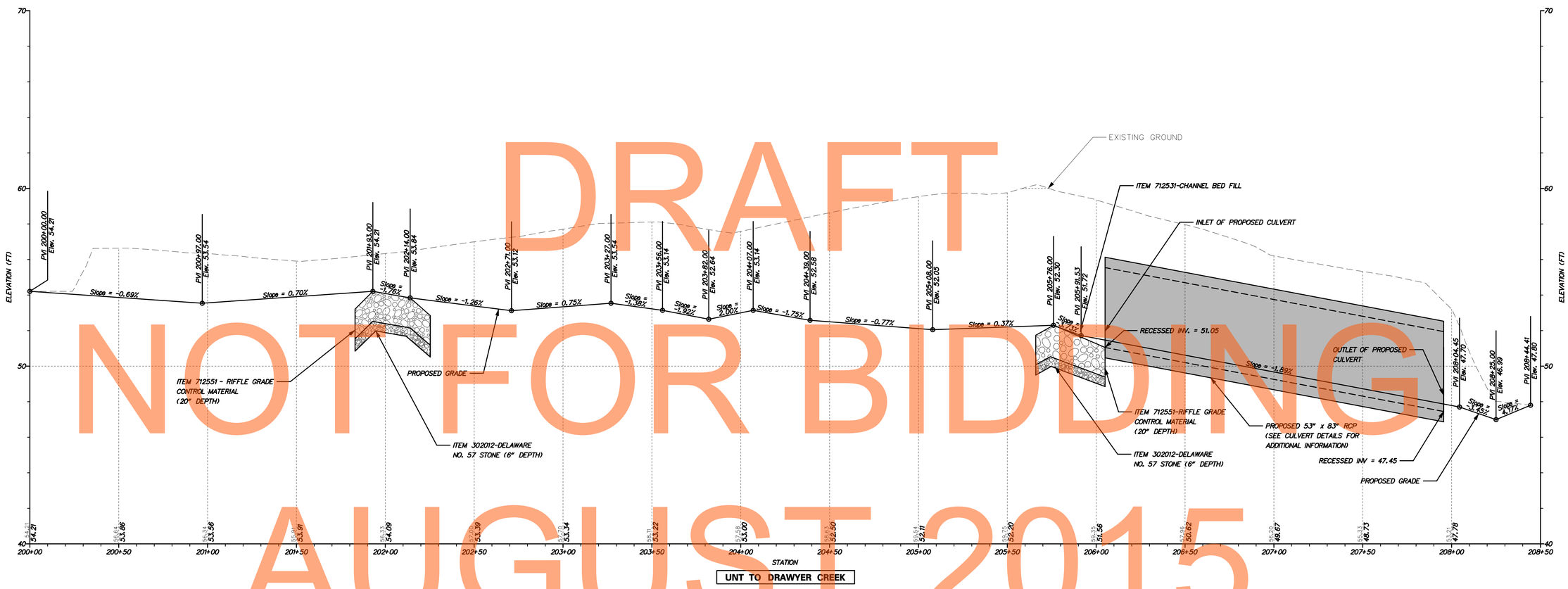
US 301,
NORFOLK SOUTHERN RR TO SR 896

CONTRACT	BRIDGE NO.	
T200911301	DESIGNED BY:	M.R.M.
COUNTY	CHECKED BY:	D.J.G.
NEW CASTLE		

STREAM RESTORATION
UNT TO DRAWYER CREEK
CONSTRUCTION PLAN

ST-10

SHEET NO.	TOTAL SHTS.
143	240



UNT TO DRAWYER CREEK

VERTICAL SCALE FEET 0 2 4 6

$DATE$

$FILE$

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 20 40 60 FEET	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	STREAM RESTORATION UNT TO DRAWYER CREEK PROFILE
				COUNTY NEW CASTLE	DESIGNED BY: M.R.M.	ST-11
					CHECKED BY: D.J.G.	SHEET NO. 144
						TOTAL SHTS. 240

LIVE STAKE SCHEDULE (ITEM 737525–LIVE STEM STAKING)

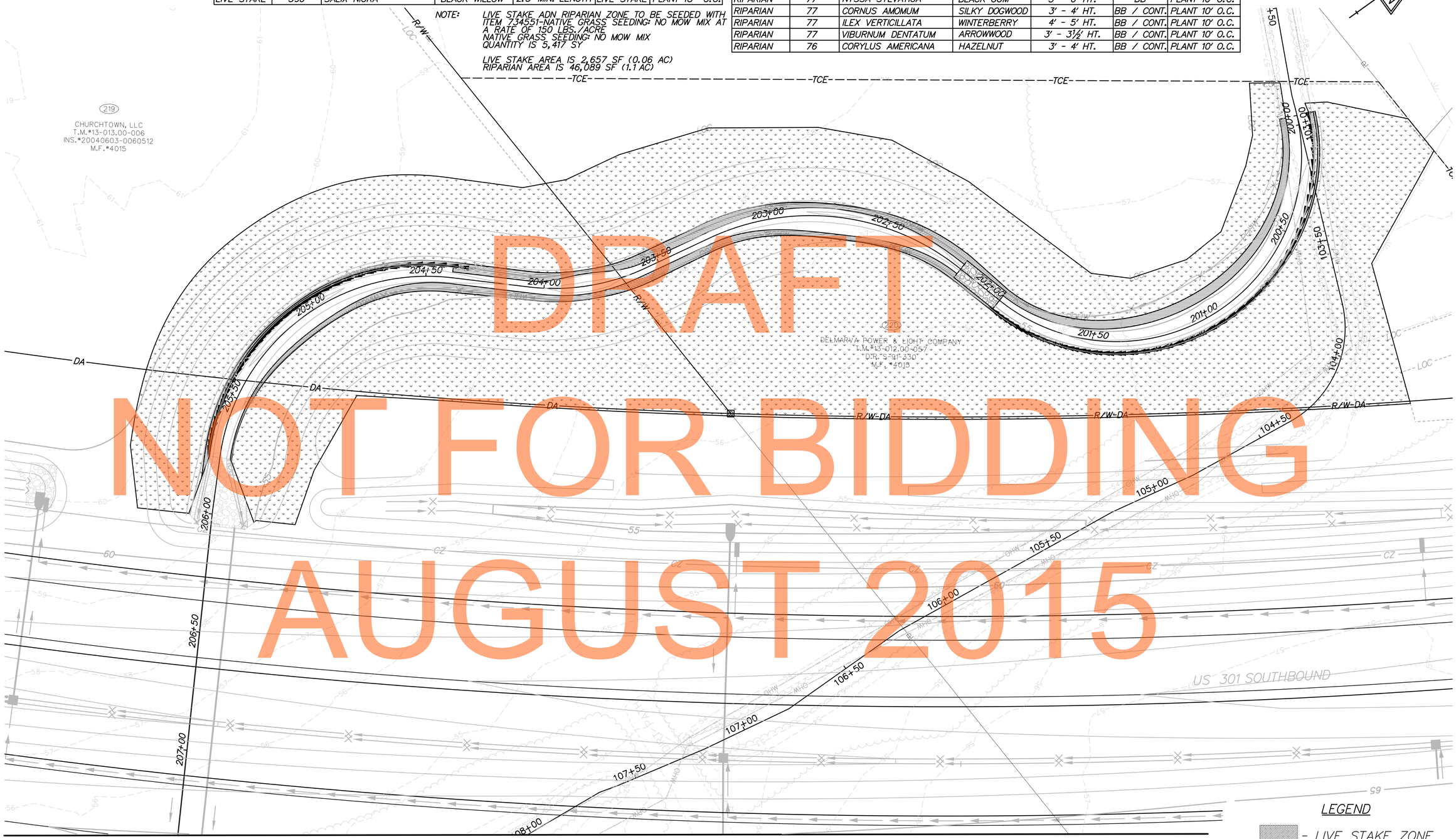
ZONE	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	COMMENTS
LIVE STAKE	591	CORNUS AMOMUM	SILKY DOGWOOD	2.5' MIN. LENGTH	LIVE STAKE	PLANT 18" O.C.
LIVE STAKE	590	SALIX NIGRA	BLACK WILLOW	2.5' MIN. LENGTH	LIVE STAKE	PLANT 18" O.C.

NOTE: LIVE STAKE ADN RIPARIAN ZONE TO BE SEEDED WITH ITEM 734551–NATIVE GRASS SEEDING: NO MOW MIX AT A RATE OF 150 LBS./ACRE
NATIVE GRASS SEEDING: NO MOW MIX
QUANTITY IS 5,417 SY

LIVE STAKE AREA IS 2,657 SF (0.06 AC)
RIPARIAN AREA IS 46,089 SF (1.1 AC)

RIPARIAN PLANTING SCHEDULE (ITEM 737523–PLANTING)

ZONE	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	COMMENTS
RIPARIAN	77	PLATANUS OCCIDENTALIS	SYCAMORE	6' - 8' HT.	BB	PLANT 10' O.C.
RIPARIAN	77	NYSSA SYLVATICA	BLACK GUM	5' - 6' HT.	BB	PLANT 10' O.C.
RIPARIAN	77	CORNUS AMOMUM	SILKY DOGWOOD	3' - 4' HT.	BB / CONT.	PLANT 10' O.C.
RIPARIAN	77	ILEX VERTICILLATA	WINTERBERRY	4' - 5' HT.	BB / CONT.	PLANT 10' O.C.
RIPARIAN	77	VIBURNUM DENTATUM	ARROWWOOD	3' - 3½' HT.	BB / CONT.	PLANT 10' O.C.
RIPARIAN	76	CORYLUS AMERICANA	HAZELNUT	3' - 4' HT.	BB / CONT.	PLANT 10' O.C.



MATCH LINE SHEET ST–13

LEGEND

- LIVE STAKE ZONE
- RIPARIAN ZONE

$DATE$

$FILE$

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE 0 20 40 60 FEET

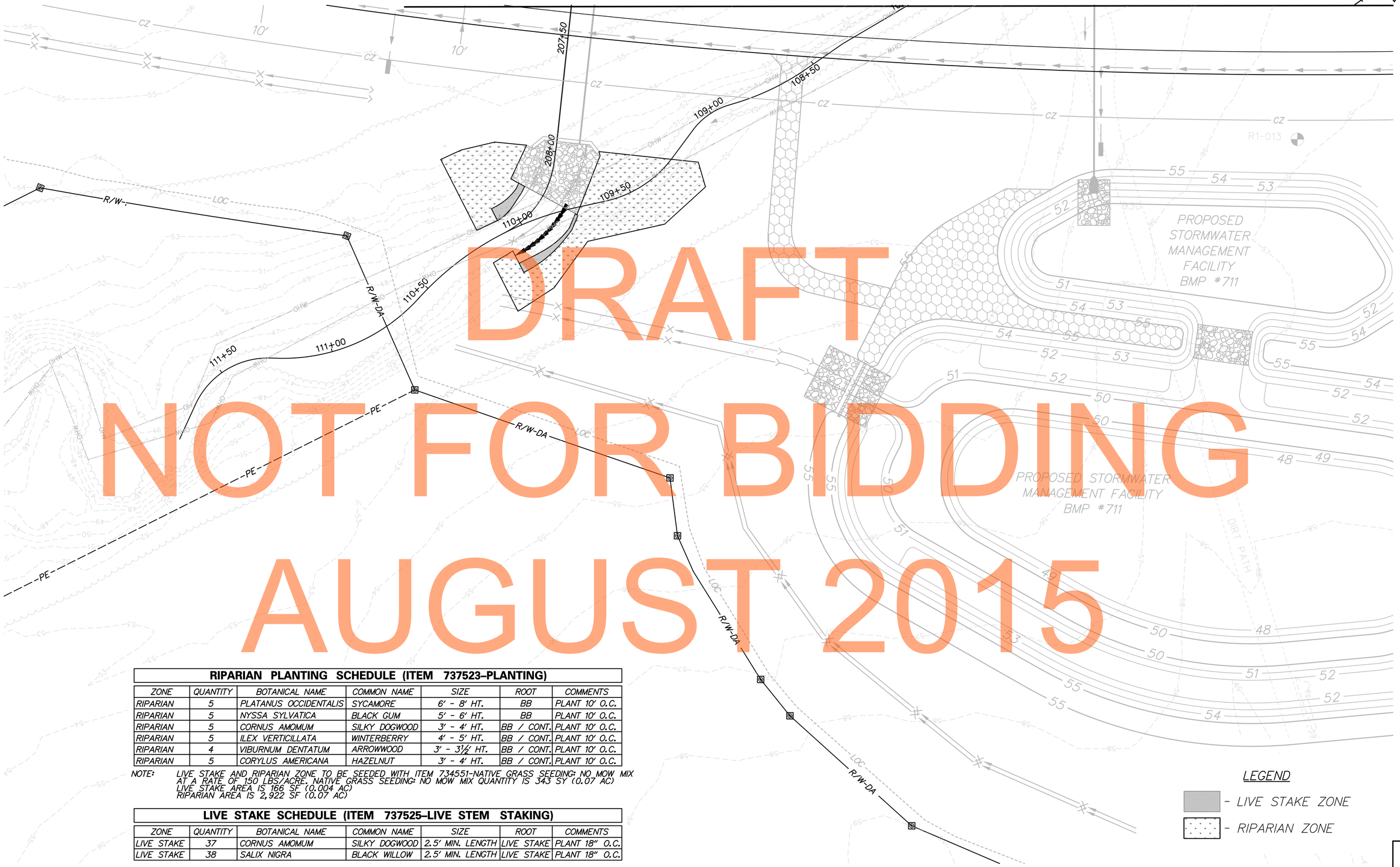
US 301, NORFOLK SOUTHERN RR TO SR 896

CONTRACT T200911301
COUNTY NEW CASTLE
BRIDGE NO.
DESIGNED BY: D.A.F
CHECKED BY: M.R.M

STREAM RESTORATION UNT TO DRAWYER CREEK LANDSCAPE PLAN

ST–12
SHEET NO. 145
TOTAL SHTS. 240

MATCH LINE SHEET ST-12



RIPARIAN PLANTING SCHEDULE (ITEM 737523–PLANTING)

ZONE	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	COMMENTS
RIPARIAN	5	PLATANUS OCCIDENTALIS	SYCAMORE	6' - 8' HT.	BB	PLANT 10' O.C.
RIPARIAN	5	NYSSA SYLVATICA	BLACK GUM	5' - 6' HT.	BB	PLANT 10' O.C.
RIPARIAN	5	CORNUS AMOMUM	SILKY DOGWOOD	3' - 4' HT.	BB / CONT.	PLANT 10' O.C.
RIPARIAN	5	ILEX VERTICILLATA	WINTERBERRY	4' - 5' HT.	BB / CONT.	PLANT 10' O.C.
RIPARIAN	4	VIBURNUM DENTATUM	ARROWWOOD	3' - 3½' HT.	BB / CONT.	PLANT 10' O.C.
RIPARIAN	5	CORYLUS AMERICANA	HAZELNUT	3' - 4' HT.	BB / CONT.	PLANT 10' O.C.

NOTE: LIVE STAKE AND RIPARIAN ZONE TO BE SEEDED WITH ITEM 734551-NATIVE GRASS SEEDING: NO MOW MIX AT A RATE OF 150 LBS/ACRE. NATIVE GRASS SEEDING: NO MOW MIX QUANTITY IS 343 SY (0.07 AC)
LIVE STAKE AREA IS 166 SF (0.004 AC)
RIPARIAN AREA IS 2,922 SF (0.07 AC)

LIVE STAKE SCHEDULE (ITEM 737525–LIVE STEM STAKING)

ZONE	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	COMMENTS
LIVE STAKE	37	CORNUS AMOMUM	SILKY DOGWOOD	2.5' MIN. LENGTH	LIVE STAKE	PLANT 18" O.C.
LIVE STAKE	38	SALIX NIGRA	BLACK WILLOW	2.5' MIN. LENGTH	LIVE STAKE	PLANT 18" O.C.

LEGEND
- LIVE STAKE ZONE
- RIPARIAN ZONE

$DATE$
$FILEA$

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

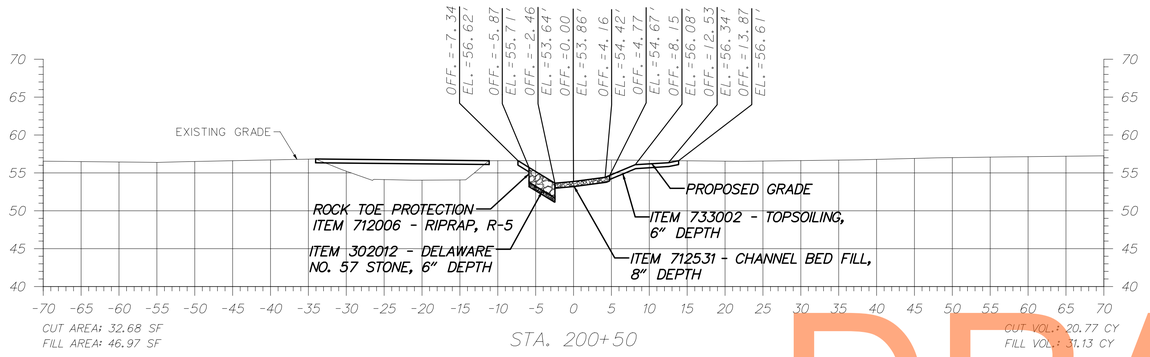
SCALE 0 20 40 60 FEET

US 301,
NORFOLK SOUTHERN RR TO SR 896

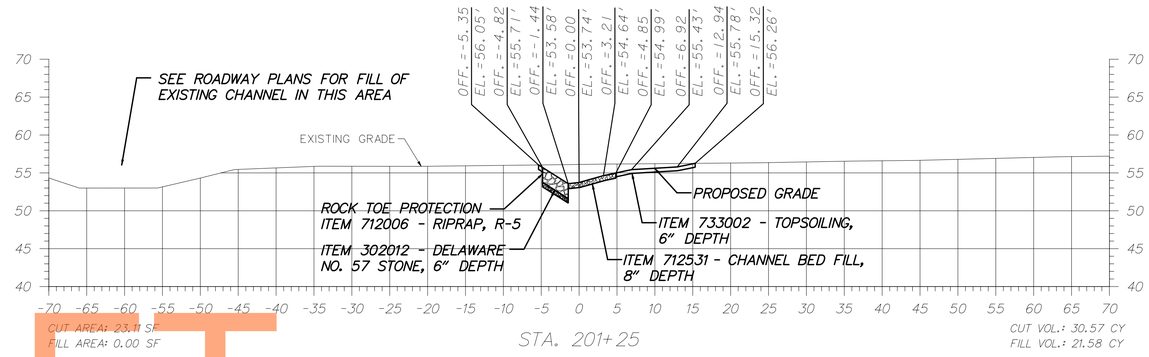
CONTRACT T200911301
COUNTY NEW CASTLE
BRIDGE NO.
DESIGNED BY: D.A.F
CHECKED BY: M.R.M

STREAM RESTORATION
UNT TO DRAWYER CREEK
LANDSCAPE PLAN

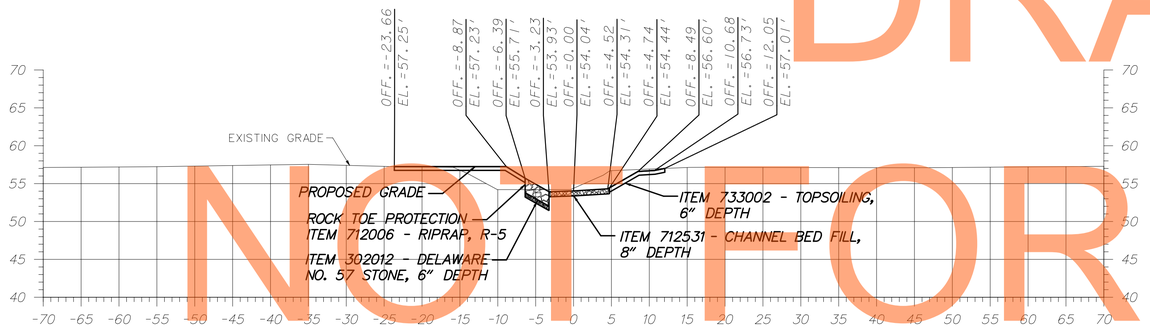
ST-13
SHEET NO. 146
TOTAL SHTS. 240



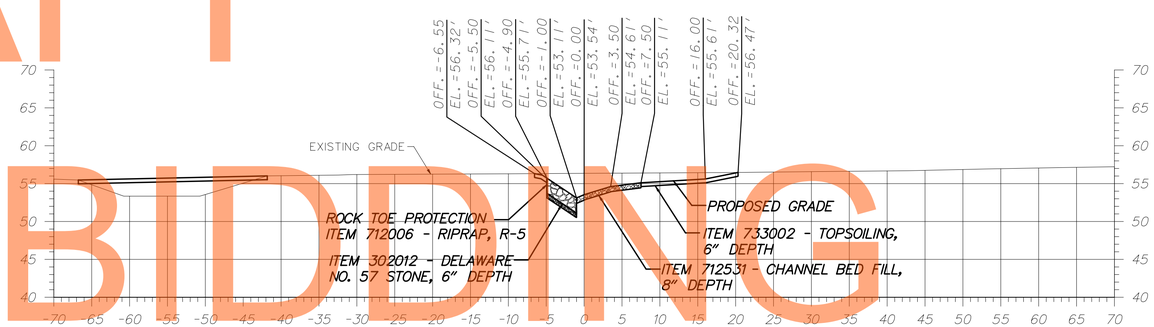
STA. 200+50



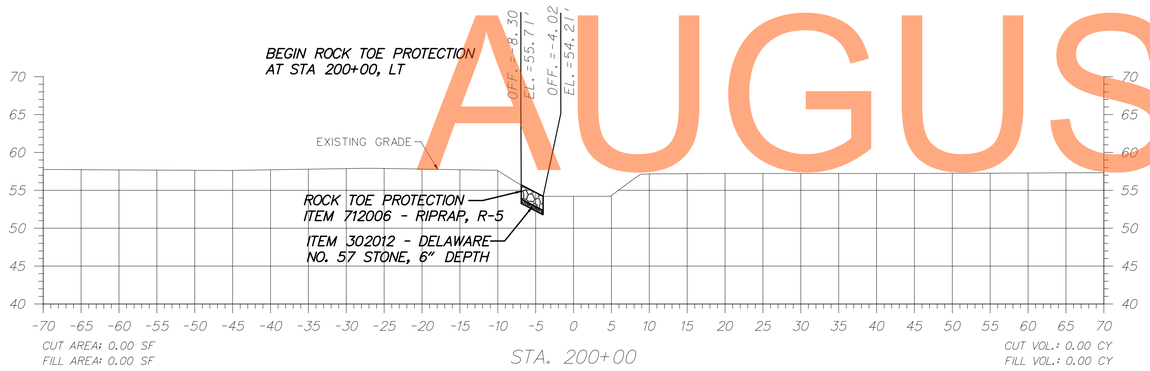
STA. 201+25



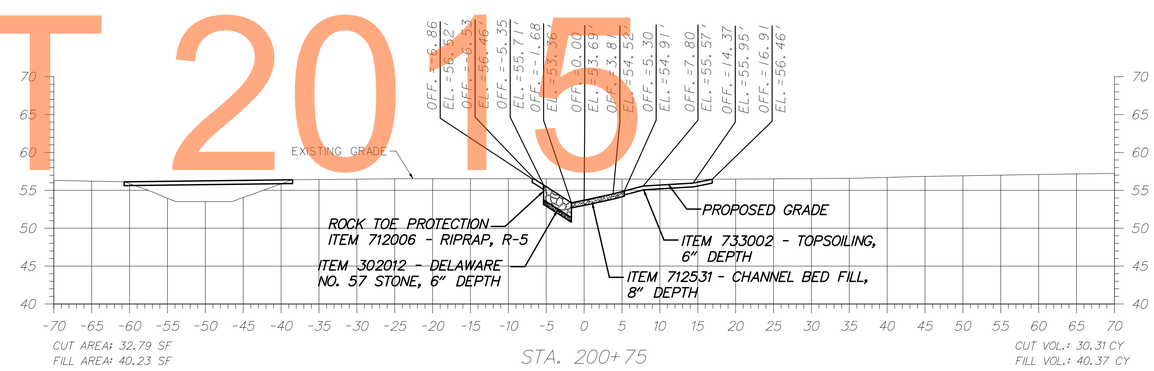
STA. 200+25



STA. 200+97



STA. 200+00



STA. 200+75

$DATE$

$FILE$

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE
0 10 20 30
FEET

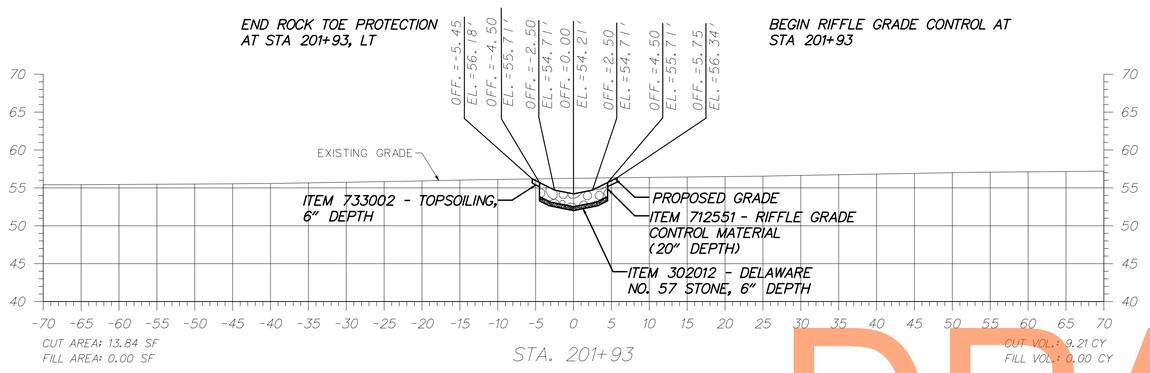
US 301,
NORFOLK SOUTHERN RR TO SR 896

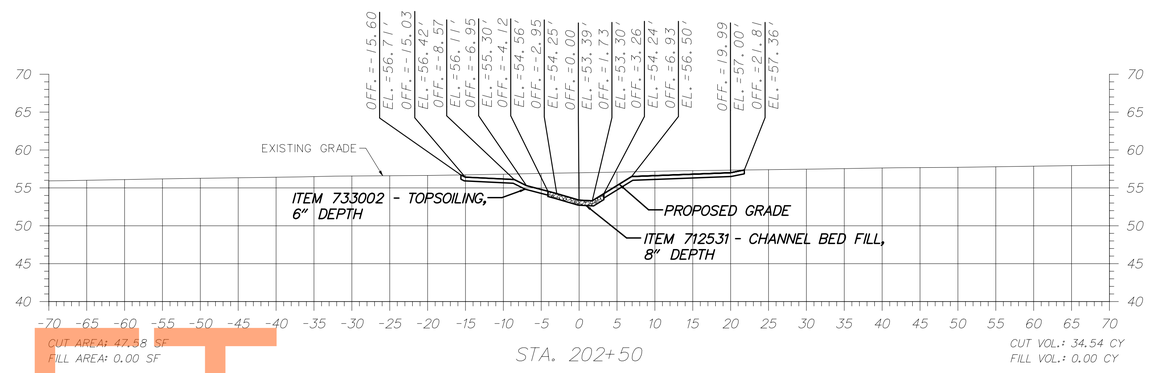
CONTRACT	BRIDGE NO.
T200911301	
COUNTY	DESIGNED BY: D.A.F
NEW CASTLE	CHECKED BY: M.R.M

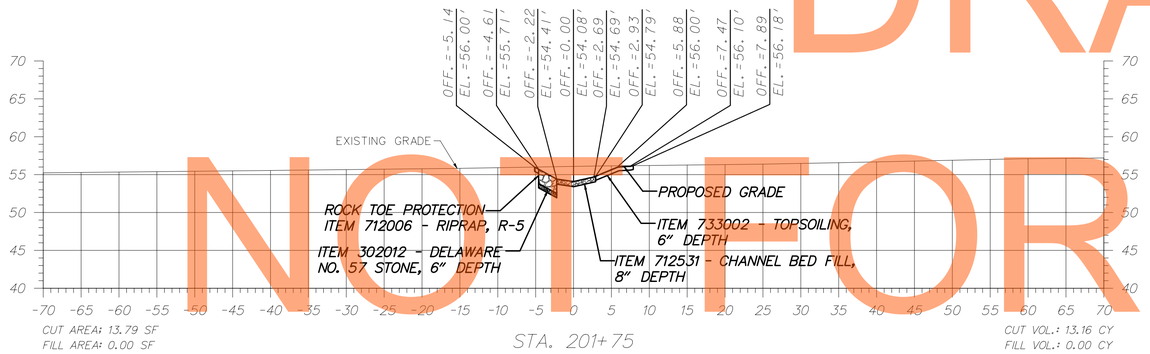
STREAM RESTORATION
UNT TO DRAWYER CREEK
CROSS-SECTIONS

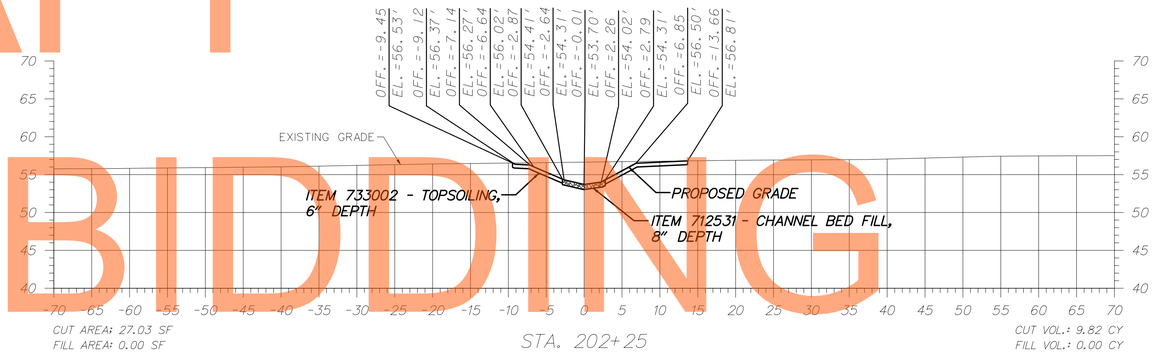
ST-14

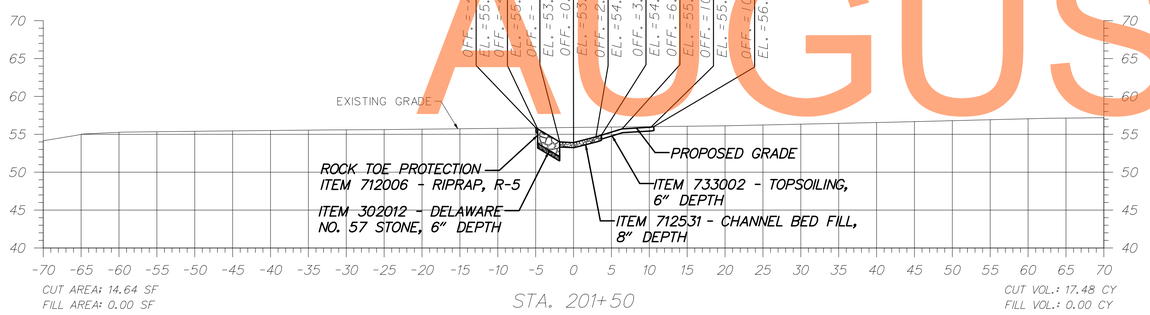
SHEET NO.	TOTAL SHTS.
147	240

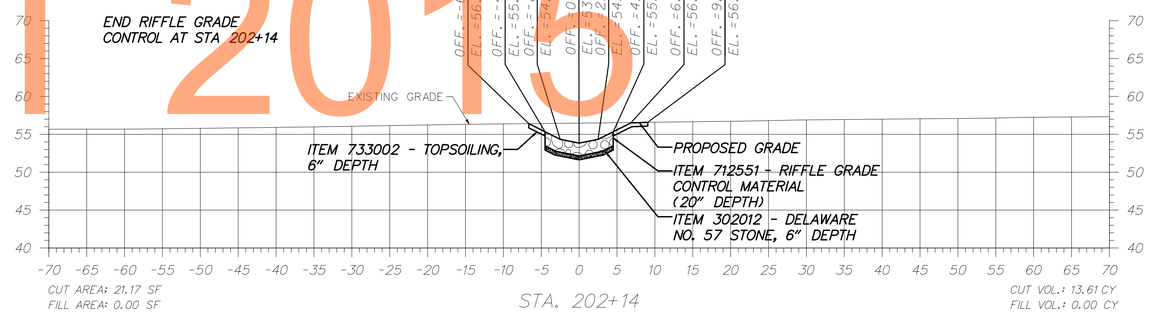












$DATE$

$FILEA$

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE
0 10 20 30
FEET

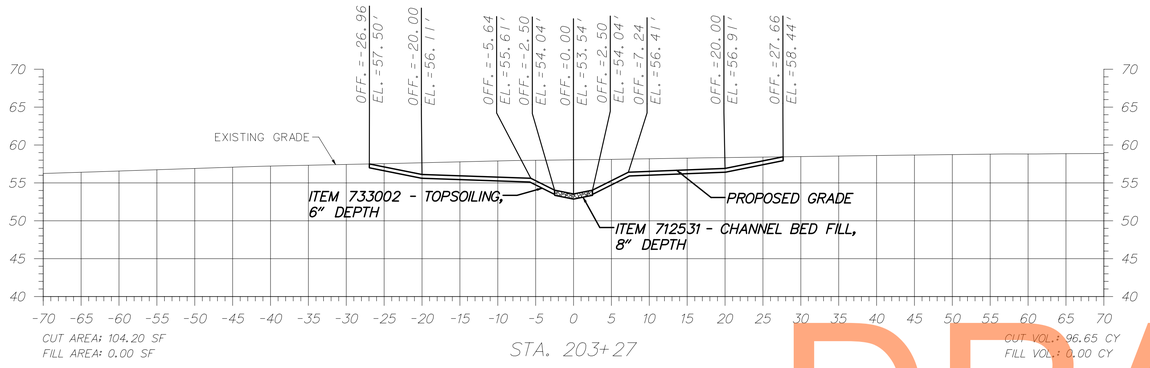
US 301,
NORFOLK SOUTHERN RR TO SR 896

CONTRACT	T200911301
COUNTY	NEW CASTLE

BRIDGE NO.	
DESIGNED BY:	D.A.F
CHECKED BY:	M.R.M

STREAM RESTORATION
UNT TO DRAWYER CREEK
CROSS-SECTIONS

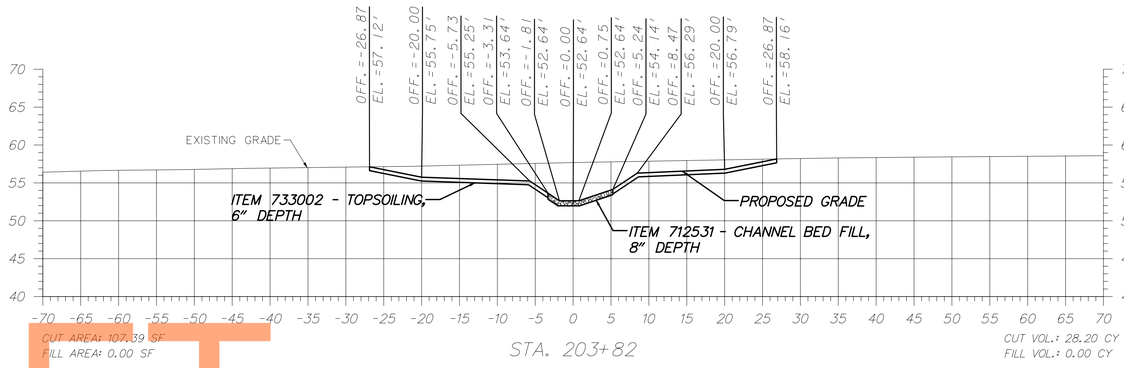
SHEET NO.	ST-15
	148
TOTAL SHTS.	240



CUT AREA: 104.20 SF
FILL AREA: 0.00 SF

STA. 203+27

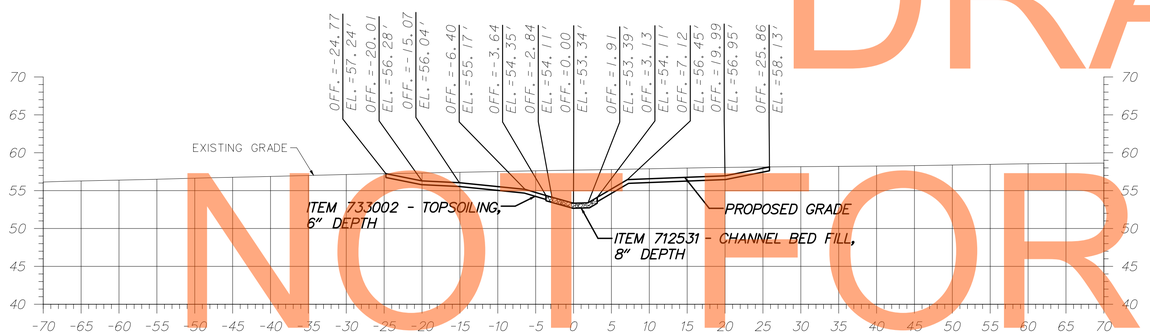
CUT VOL.: 96.65 CY
FILL VOL.: 0.00 CY



CUT AREA: 107.39 SF
FILL AREA: 0.00 SF

STA. 203+82

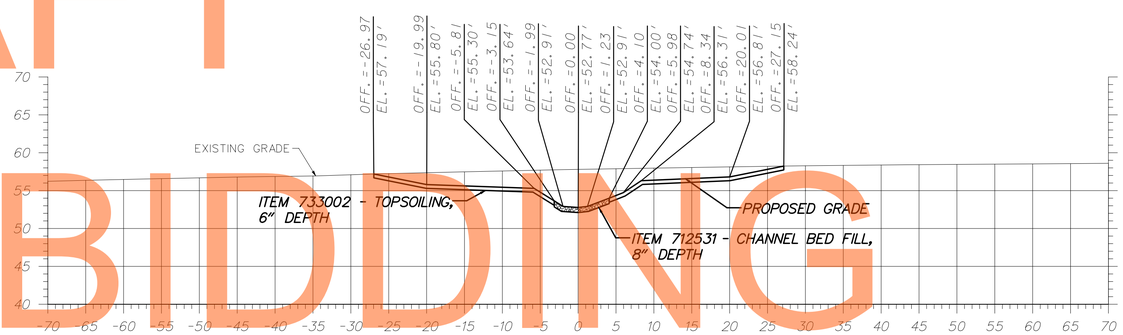
CUT VOL.: 28.20 CY
FILL VOL.: 0.00 CY



CUT AREA: 89.10 SF
FILL AREA: 0.00 SF

STA. 203+00

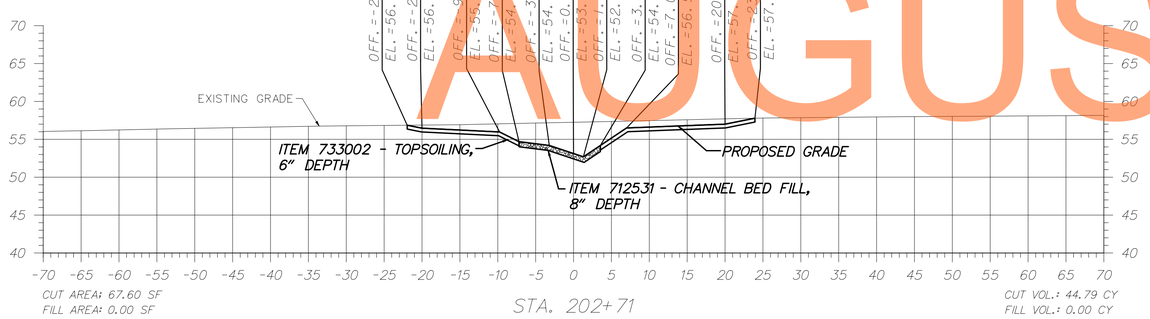
CUT VOL.: 84.15 CY
FILL VOL.: 0.00 CY



CUT AREA: 110.13 SF
FILL AREA: 0.00 SF

STA. 203+75

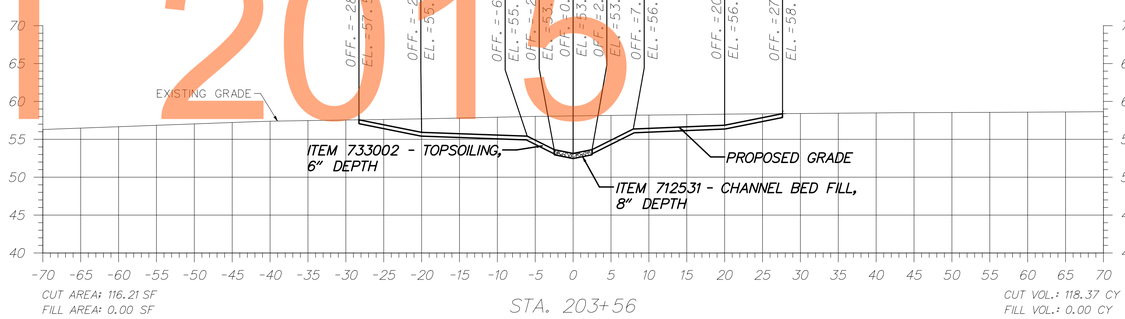
CUT VOL.: 79.64 CY
FILL VOL.: 0.00 CY



CUT AREA: 67.60 SF
FILL AREA: 0.00 SF

STA. 202+71

CUT VOL.: 44.79 CY
FILL VOL.: 0.00 CY



CUT AREA: 116.21 SF
FILL AREA: 0.00 SF

STA. 203+56

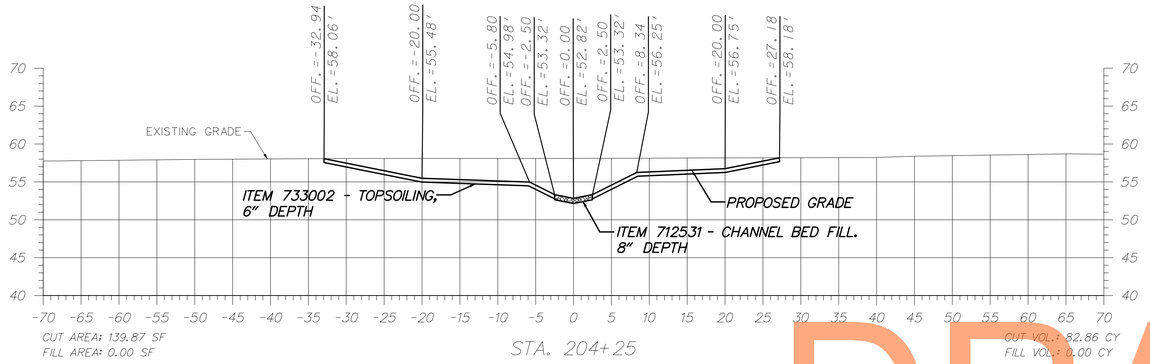
CUT VOL.: 118.37 CY
FILL VOL.: 0.00 CY

$DATE$

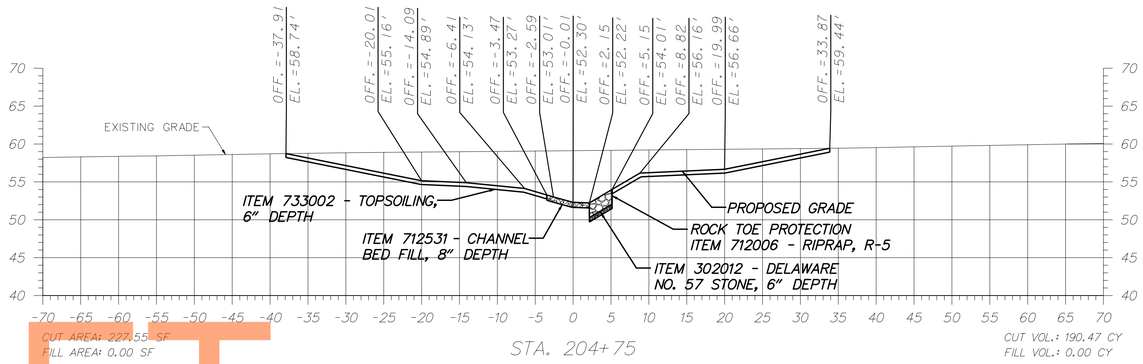
$FILE$

ST-16

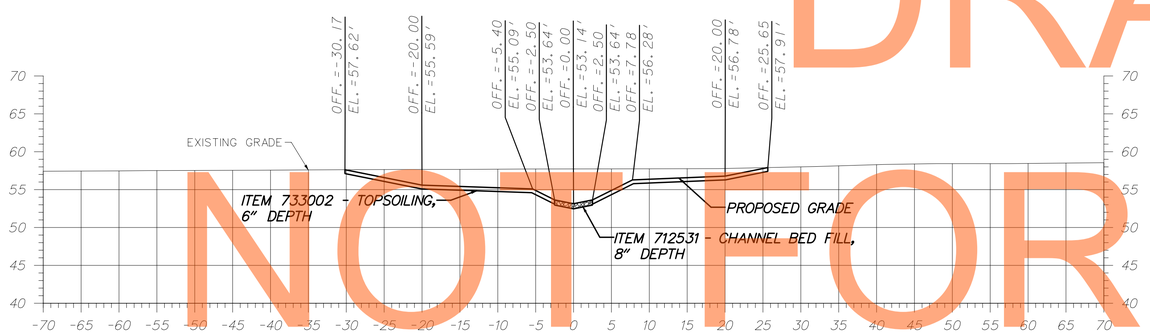
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 10 20 30 FEET	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	STREAM RESTORATION UNT TO DRAWYER CREEK CROSS-SECTIONS	SHEET NO. 149
				COUNTY NEW CASTLE	DESIGNED BY: D.A.F		TOTAL SHTS. 240
					CHECKED BY: M.R.M		



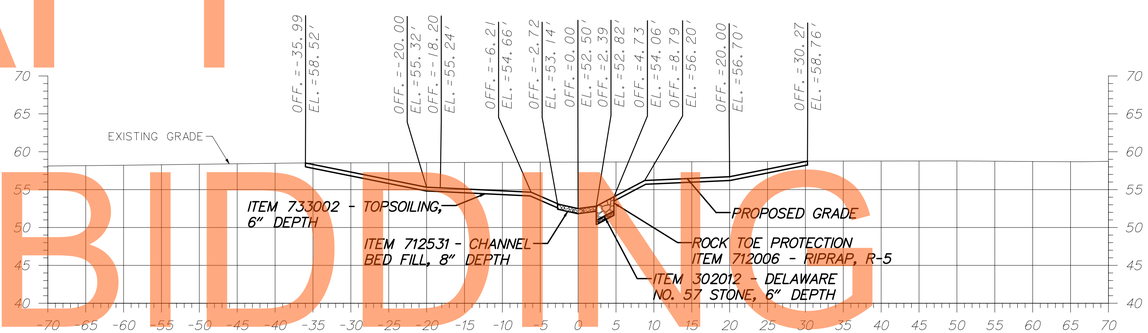
STA. 204+25



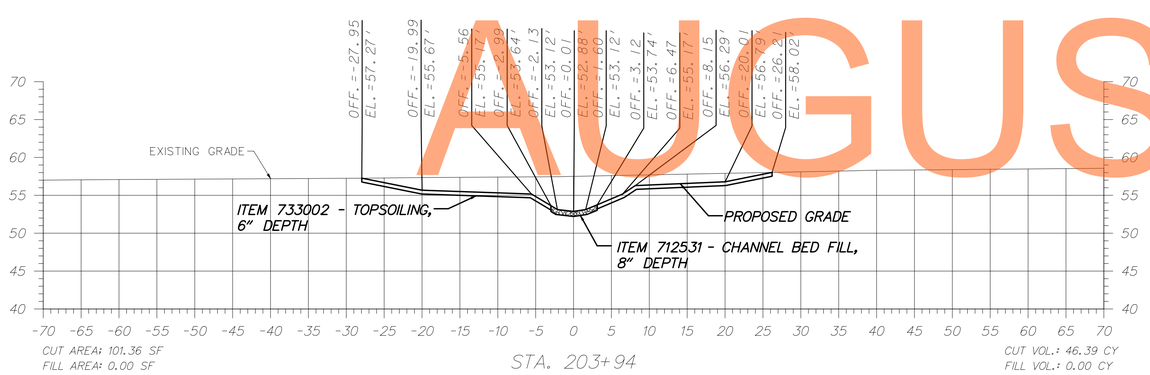
STA. 204+75



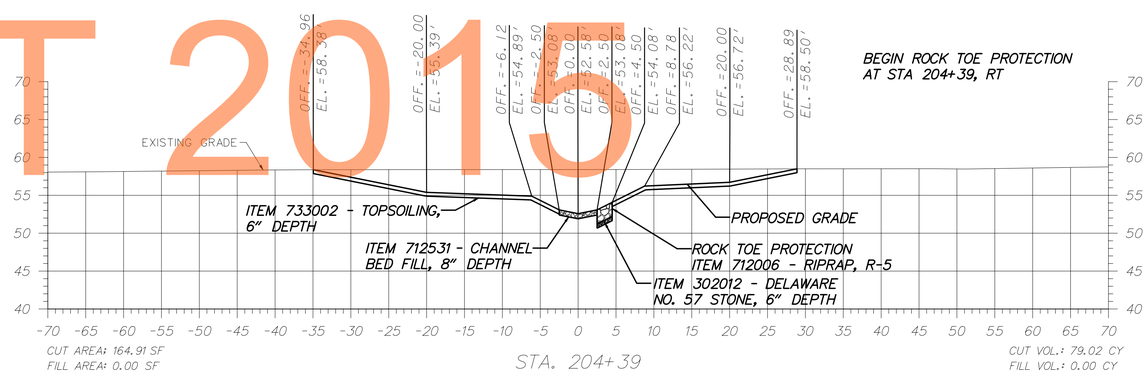
STA. 204+07



STA. 204+50



STA. 203+94



STA. 204+39

$DATE$

$FILEA$

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

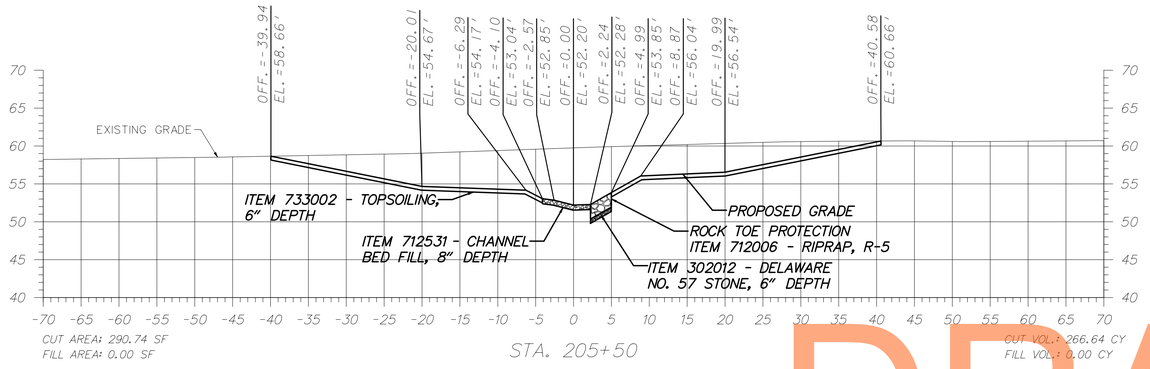
SCALE
0 10 20 30
FEET

US 301,
NORFOLK SOUTHERN RR TO SR 896

CONTRACT	BRIDGE NO.	
T200911301	DESIGNED BY:	D.A.F
COUNTY	CHECKED BY:	M.R.M
NEW CASTLE		

STREAM RESTORATION
UNT TO DRAWYER CREEK
CROSS-SECTIONS

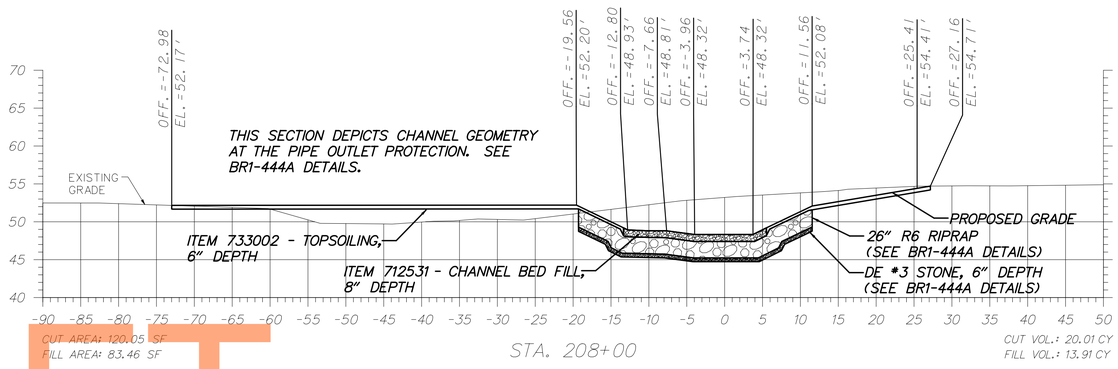
ST-17	
SHEET NO.	150
TOTAL SHTS.	240



CUT AREA: 290.74 SF
FILL AREA: 0.00 SF

STA. 205+50

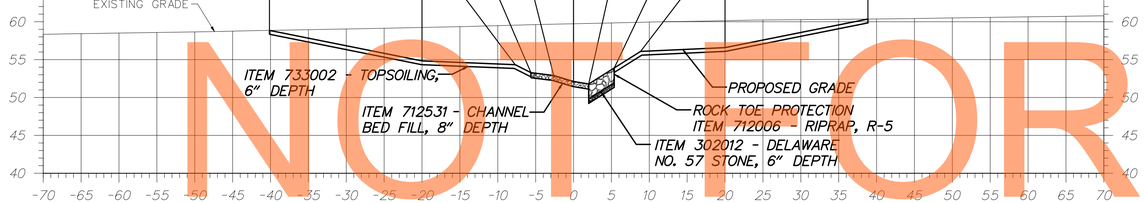
CUT VOL.: 266.64 CY
FILL VOL.: 0.00 CY



CUT AREA: 120.05 SF
FILL AREA: 83.46 SF

STA. 208+00

CUT VOL.: 20.01 CY
FILL VOL.: 13.91 CY



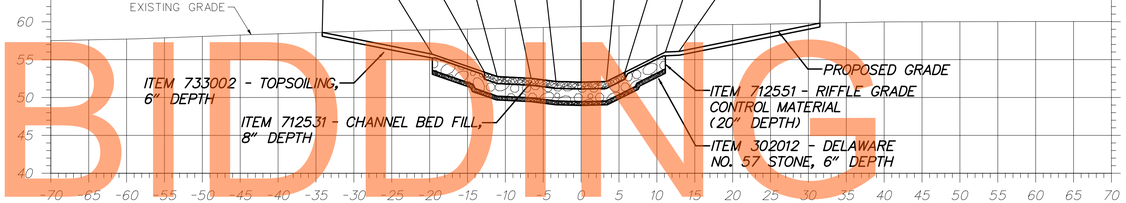
CUT AREA: 285.19 SF
FILL AREA: 0.00 SF

STA. 205+25

CUT VOL.: 178.63 CY
FILL VOL.: 0.00 CY

SEE BR1-444A DETAILS FOR PROPOSED CONDITIONS AT STA 206+05.

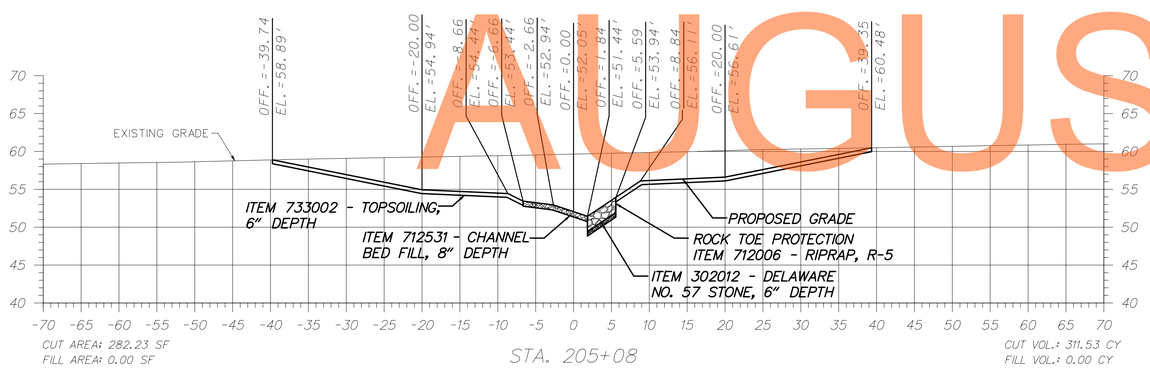
END RIFFLE GRADE CONTROL AT STA 206+05



CUT AREA: 245.91 SF
FILL AREA: 0.00 SF

STA. 206+00

CUT VOL.: 237.75 CY
FILL VOL.: 0.00 CY



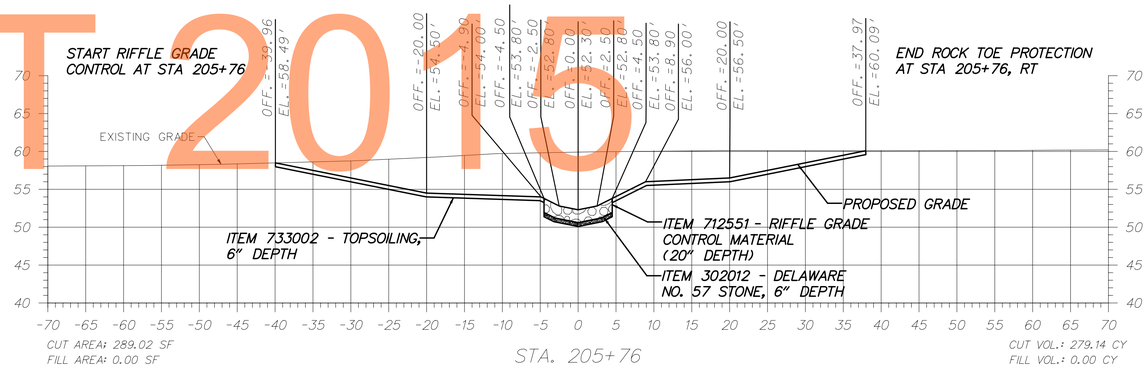
CUT AREA: 282.23 SF
FILL AREA: 0.00 SF

STA. 205+08

CUT VOL.: 311.53 CY
FILL VOL.: 0.00 CY

START RIFFLE GRADE CONTROL AT STA 205+76

END ROCK TOE PROTECTION AT STA 205+76, RT



CUT AREA: 289.02 SF
FILL AREA: 0.00 SF

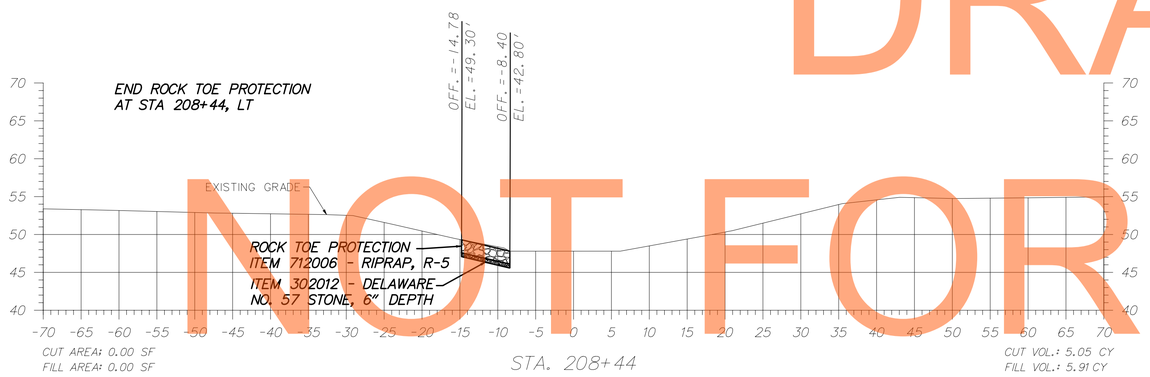
STA. 205+76

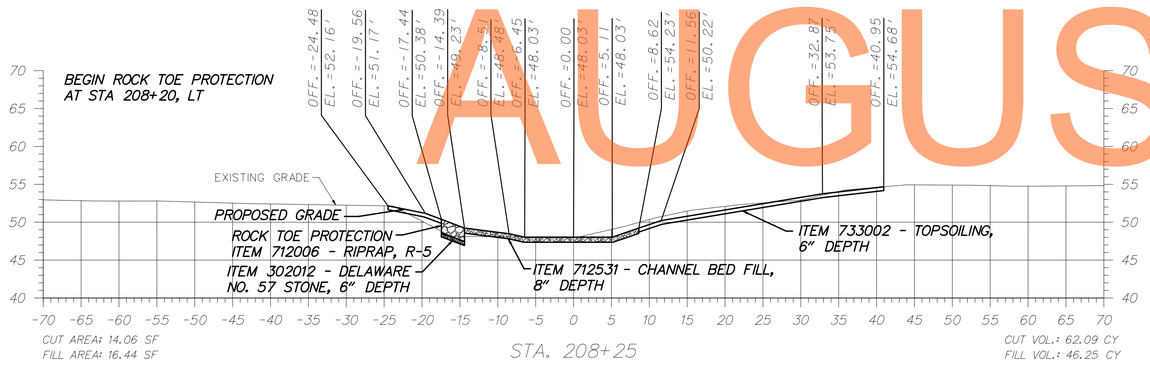
CUT VOL.: 279.14 CY
FILL VOL.: 0.00 CY

$DATE$

$FILEA$

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 10 20 30 FEET	US 301, NORFOLK SOUTHERN RR TO SR 896	CONTRACT T200911301	BRIDGE NO.	STREAM RESTORATION UNT TO DRAWYER CREEK CROSS-SECTIONS	ST-18
				COUNTY NEW CASTLE	DESIGNED BY: D.A.F		SHEET NO. 151
					CHECKED BY: M.R.M		TOTAL SHTS. 240





$DATE$

$FILEA$

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE
0 10 20 30
FEET

US 301,
NORFOLK SOUTHERN RR TO SR 896

CONTRACT	BRIDGE NO.	
T200911301	DESIGNED BY:	D.A.F
COUNTY	CHECKED BY:	M.R.M
NEW CASTLE		

STREAM RESTORATION
UNT TO DRAWYER CREEK
CROSS-SECTIONS

ST-19	
SHEET NO.	152
TOTAL SHTS.	240