CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	84	140

NEC COMMUTER RAIL IMPROVE.- DELAWARE YARD to RAGAN - Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SB-48

SUMMARY OF LABORATORY DATA/ BORING INFORMATION THIRD TRACK

NOT TO SCALE

Summary of Loss on Ignition Tests

Boring/ Sample No.	Depth (ft)	USCS	Moisture Content (%)	Organic Content (%)
F-MC-2A / U-2	23.0-25.0	OL	60.4	11.3
F-MC-3A / U-1	16.0-18.0	OH	49.8	4.2
F-MC-3A / U-2	25.0-27.0	OL	60.3	7.1
F-MC-5A / U-1	14.0-16.0	OH	61.8	5.2
F-RW-7 / S-5	19.0-21.0	MH	112.2	8.1

Summary of UU Triaxial Shear Testing

Boring/ Sample No.	Depth (ft)	USCS	Wet Unit Weight (pcf)	Moisture Content (%)	Undrained Shear Strength Su (psf)
F-MC-2A / U-2	23.0-25.0	OL	96.0	60.4	1059
F-MC-3A / U-2	25.0-27.0	OL	102.7	60.3	984
F-MC-5A / U-1	14.0-16.0	OH	100.0	61.8	384
F-MC-6A / U-6	24.0-26.0	CL-ML	115.5	34.2	728
F-MC-6B / U-3	18.0-20.0	MH	64.0	83.5	554
F-MC-8A / U-2	21.0-23.0	MH	103.8	55.9	762
F-MC-11B / U-1	13.0-15.0	CL	120.6	24.6	582
F-MC-11B / U-2	23.0-25.0	MH	93.6	67.5	1074

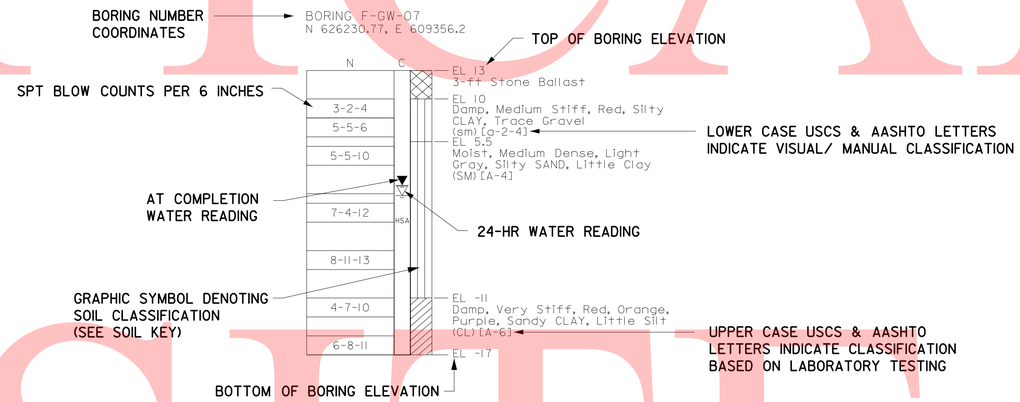
Summary of Direct Shear Testing

Boring/ Sample No.	Depth (ft)	USCS	Average Wet Unit Weight (pcf)	Moisture Content (%)	Peak Drained Shear Strength	
					c (psf)	Phi (deg)
F-MC-1A / U-2	21.0-23.0	MH	94.0	74.0	165	25.9
F-MC-2A / U-2	23.0-25.0	OL	98.3	60.4	485	21.6
F-MC-5A / U-1	14.0-16.0	OH	92.8	61.8	123	26.7
F-MC-6B / U-3	18.0-20.0	MH	96.7	83.5	236	25.9
F-MC-7A / U-2	20.0-22.0	MH	80.4	126.4	445	29.9
F-MC-10A / U-2	20.0-22.0	MH	83.7	110.9	575	28.1
F-MC-11A / U-1	14.0-16.0	MH	102.9	44.2	342	21.0
Test Pit / B-1 (Remolded)	3.0-11.0	SP-SM	129.8	6.3	458	45.5

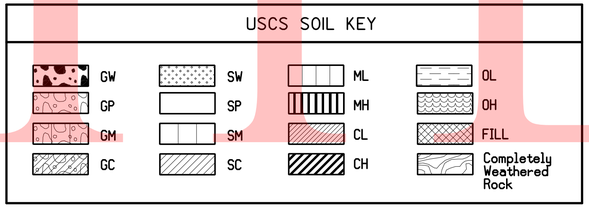
Summary of Point Load Test for Rock Samples

Boring No.	Depth (ft)	Rock Material	Test Angle In Relation to Rock Orientation	Max Pressure @ Rupture (psi)	Unconfined Compressive Strength qu (ksi)
F-MC-1A	60.4	Mafic Gneiss	Fresh Break	4952	45.40
F-MC-1A	65.4	Mafic Gneiss	Fresh Break	3736	34.25
F-MC-1A	71.5	Mafic Gneiss	Fresh Break	3150	28.88
F-MC-2	66.4	Mafic Gneiss	Partly Along Pre-existing Fracture	844	7.74
F-MC-2	65.7	Mafic Gneiss	Fresh Break	4012	36.78
F-MC-5A	59.5	Mafic Gneiss	Along Foliation	435	3.99
F-MC-5A	66.2	Mafic Gneiss	Fresh Break	4519	41.43
F-MC-5A	73.3	Mafic Gneiss	Fresh Break	4334	39.73
F-MC-6	63.0	Mafic Gneiss	Fresh Break	4766	43.69
F-MC-6	73.1	Mafic Gneiss	Fresh Break	2158	19.78
F-MC-7	60.1	Mafic Gneiss	Fresh Break	4888	44.81
F-MC-7	64.7	Mafic Gneiss	Fresh Break	4270	39.15
F-MC-7	72.5	Mafic Gneiss	Fresh Break	3878	35.55
F-MC-7	74.9	Mafic Gneiss	Fresh Break	2457	22.53
F-MC-8	78.7	Mafic Gneiss	Fresh Break	4809	44.09
F-MC-8	83.4	Mafic Gneiss	Fresh Break	2265	20.77
F-MC-10	64.7	Mafic Gneiss	Fresh Break	3962	36.32
F-MC-10	72.2	Mafic Gneiss	Fresh Break	5047	46.27
F-MC-11	61.4	Mafic Gneiss	Fresh Break	4998	45.82

EXAMPLE SPT PROBE



USCS SOIL KEY



NOTES:

1. THE SOIL BORINGS WERE PERFORMED BETWEEN NOVEMBER 2007 AND FEBRUARY 2008 BY WALTON CORPORATION.
2. THE SOIL SYMBOLS REFLECT ONLY THE MAJOR SOIL CONSTITUENT, FOR MORE COMPLETE SOIL CHARACTERISTIC REFER TO THE SOIL DESCRIPTIVE TEXT.
3. N = BLOWS ON A 2 INCH OD SAMPLING SPOON BY 140 LB. DRIVE-WEIGHT FALLING 30 INCHES INDICATING SUCCESSIVE 6 INCH INCREMENTS OF PENETRATION.
4. W.L. = WATER LEVEL READING.
5. B.O.F. = BOTTOM OF FOOTING.
6. BORINGS AND SAMPLES CONFORM TO AASHTO DESIGNATIONS T-206, T-225 AND T-306.
7. THE SOIL HAS BEEN CLASSIFIED EITHER VISUALLY/ MANUALLY ACCORDING TO ASTM D 2488 AND AASHTO M 145, OR BY LABORATORY TESTING BY A RK&K GEOLOGIST OR ENGINEER.
8. FOR A SUMMARY OF LABORATORY TEST DATA REFER TO DRAWING NO. SB-47 AND SB-48.
9. A GEOTECHNICAL DATA REPORT HAS BEEN PREPARED BY RUMMEL, KLEPPER & KAHL, LLP (RK&K). THIS REPORT IS FOR INFORMATION PURPOSES ONLY AND SHALL NOT BE CONSIDERED AS PART OF THE CONTRACT DOCUMENTS. THE OPINIONS AND CONCLUSIONS OF RK&K SUMMARIZED IN THE GEOTECHNICAL REPORT REPRESENT OUR INTERPRETATION OF THE SUBSURFACE CONDITIONS AND THE PLANNED CONSTRUCTION AT THE TIME OF THE REPORT PREPARATION. THE DATA IN THIS REPORT MAY NOT BE ADEQUATE FOR CONTRACTORS ESTIMATING PURPOSES.
10. THE GEOTECHNICAL ENGINEERING REPORT FOR THIS PROJECT, PREPARED BY RK&K IS ENTITLED: "SUBSURFACE EXPLOARION & GEOTECHNICAL EVALUATION FOR THE DTC- NEC COMMUTER RAIL IMPROVEMENTS PROJECT THIRD TRACK- YARD TO RAGAN INTERLOCKINGS", DATED APRIL 14, 2008. THIS DOCUMENT IS AVAILABLE UPON REQUEST.
11. THE BORING AND TEST DRIVE PLAN SHEETS PROVIDE DETAILS RELATED TO THE SUBSURFACE CONDITIONS ENCOUNTERED IN THE VARIOUS BORINGS. THE STRATIFICATION LINES SHOWN ON THE BORING AND TEST DRIVE PLAN SHEETS REPRESENT APPROXIMATE TRANSITIONS BETWEEN MATERIAL TYPES. ALSO, THE BORINGS DEPICT CONDITIONS AT PARTICULAR LOCATIONS AND AT THE TIME OF FIELD WORK. SOME CONDITIONS, PARTICULARLY GROUNDWATER CONDITIONS BETWEEN BORINGS COULD VARY FROM THE CONDITIONS ENCOUNTERED AT THE PARTICULAR BORING LOCATION.
12. THE SOIL AND ROCK SAMPLES OBTAINED DURING THE SUBSURFACE EXPLORATION FOR THIS PROJECT ARE AVAILABLE TO REVIEW AT RK&K'S OFFICE LOCATED AT 601 NORTH CALVERT STREET, BALTIMORE, MD 21202. ALL INQUIRIES FOR REVIEWING SAMPLES SHOULD BE THROUGH RK&K'S PROJECT MANAGER. A MINIMUM 48-HOUR NOTICE IS REQUIRED.

4/20/2009
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PREL. TRACING ____ DESIGN ____ CHKD. ____
UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	85	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SB-49

BORING & DRIVE TESTS

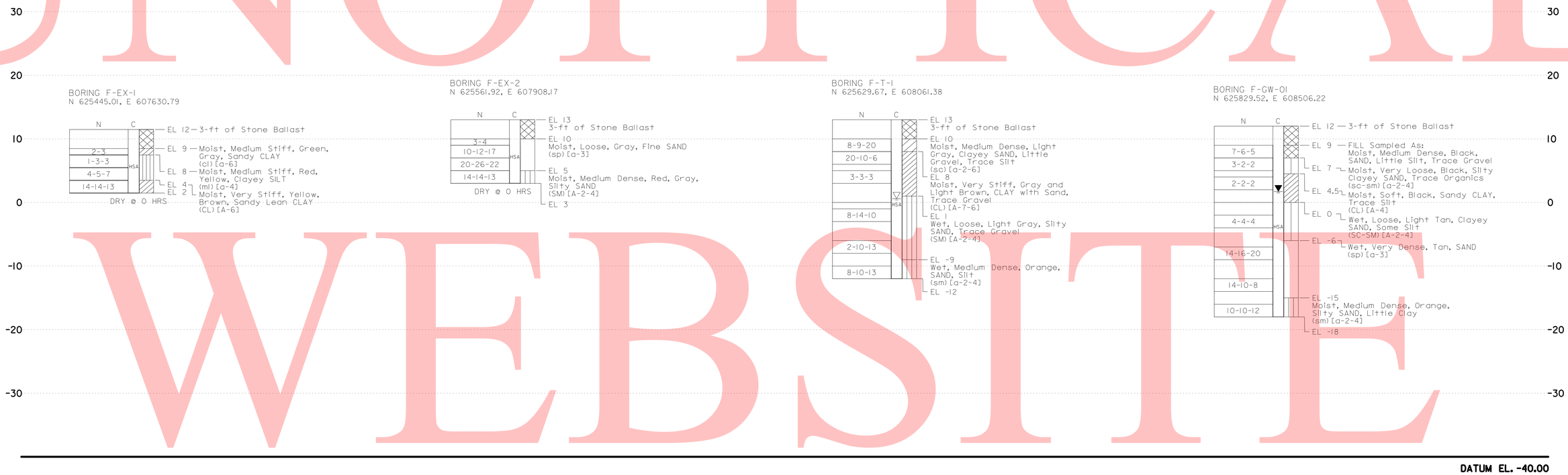
THIRD TRACK

SCALE AS NOTED

SCALE

10 5 0 10

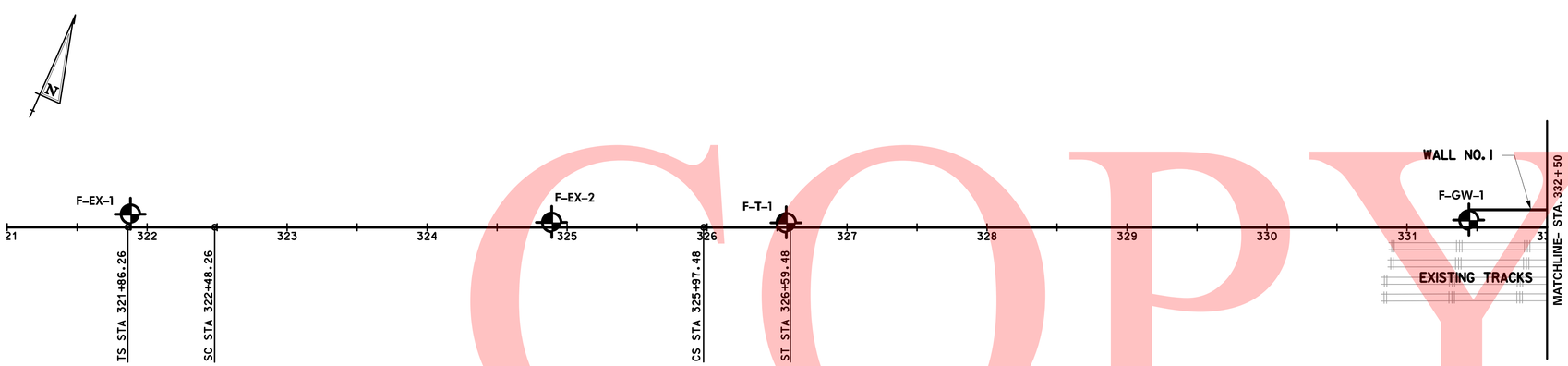
1"= 10'



DATUM EL. -40.00

BORING & DRIVE TESTS

SCALE 1/8"=1'-0"



FOR BORING INFORMATION AND NOTES SEE DRAWING NO. SB-47 AND SB-48

BORING & DRIVE TESTS LOCATION PLAN

SCALE 1"= 50'-0"

UNOFFICIAL WEBSITE COPY

4/20/2009
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PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	86	140

DRAWING NO. SB-50

BORING & DRIVE TESTS

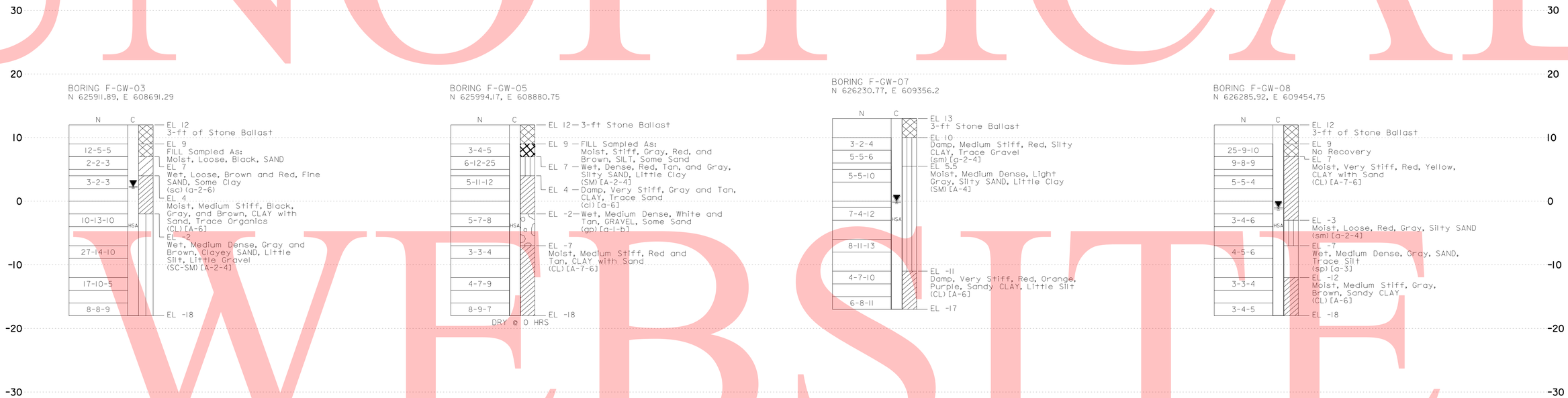
THIRD TRACK

SCALE AS NOTED

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



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BORING & DRIVE TESTS

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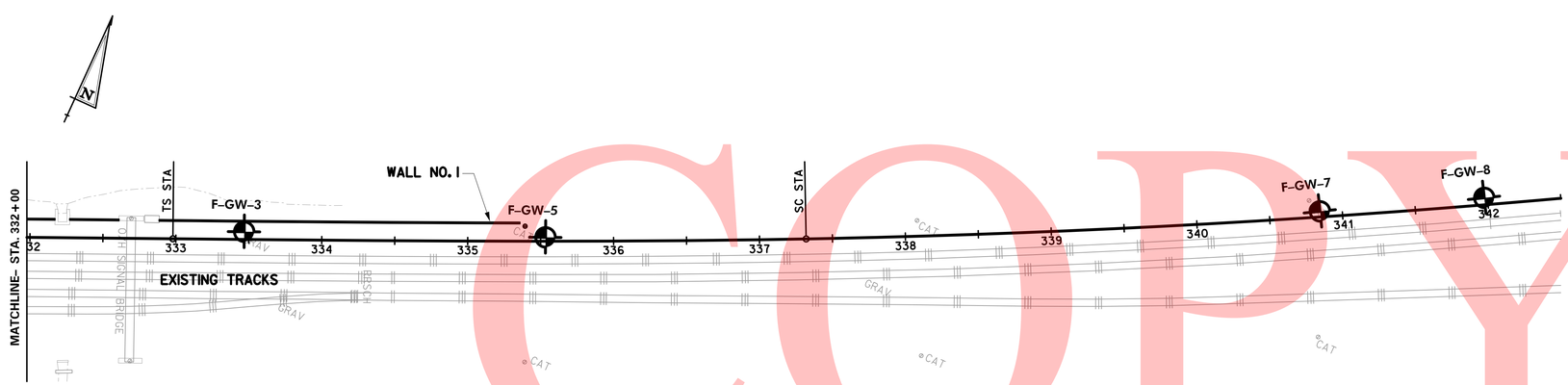

FOR BORING INFORMATION AND NOTES SEE DRAWING NO. SB-47 AND SB-48

BORING & DRIVE TESTS LOCATION PLAN

SCALE 1"= 50'-0"

UNOFFICIAL WEBSITE COPY

4/20/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	87	140

DRAWING NO. SB-51

BORING & DRIVE TESTS

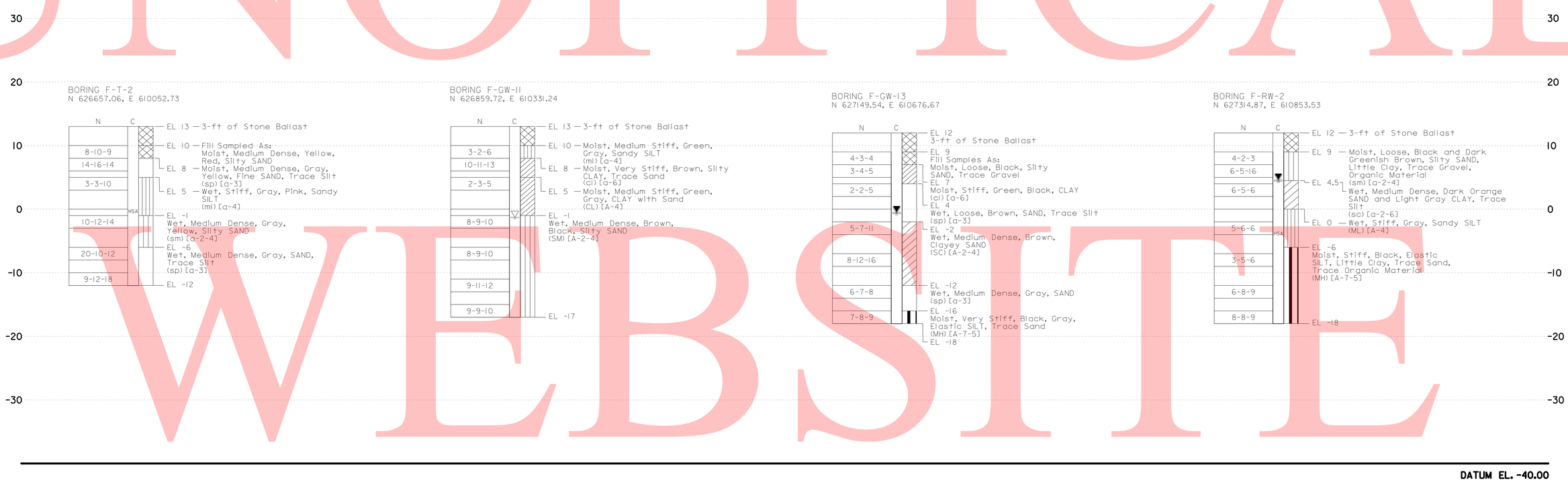
THIRD TRACK

SCALE AS NOTED

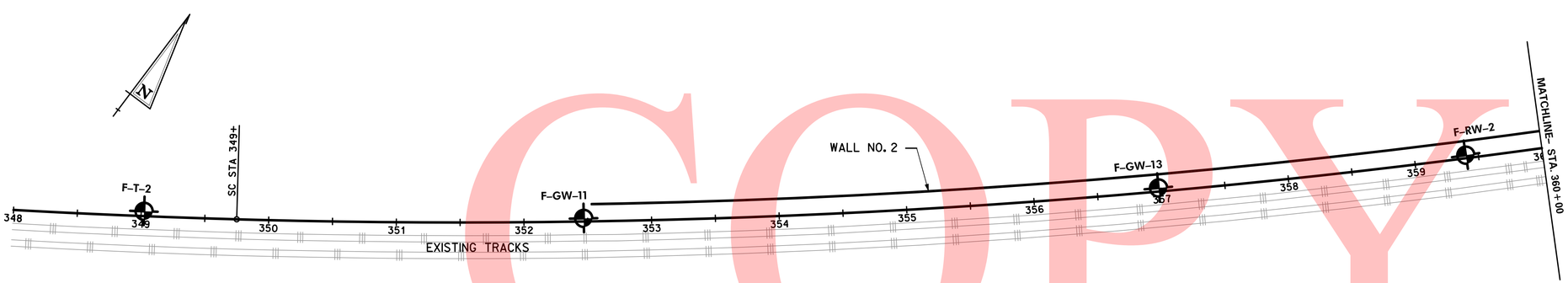
NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



BORING & DRIVE TESTS
SCALE 1/8"=1'-0"



BORING & DRIVE TESTS LOCATION PLAN
SCALE 1"= 50'-0"

FOR BORING INFORMATION AND NOTES SEE DRAWING NO. S-47 AND S-48

4/20/2009
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DESIGN ____ CHKD. ____

PRELIM. TRACING ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	88	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SB-52

BORING & DRIVE TESTS

THIRD TRACK

SCALE AS NOTED

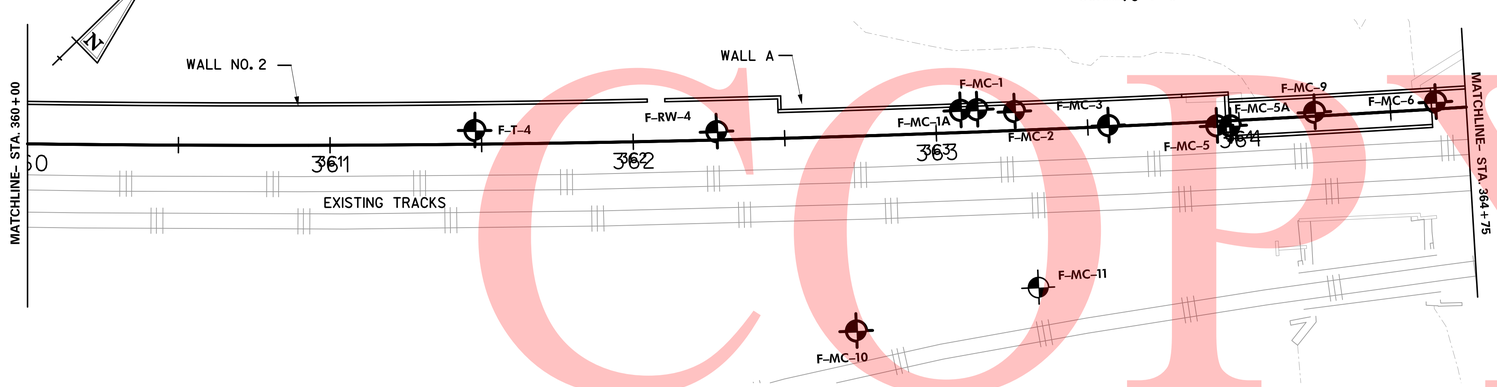
•OFFSET(S) OF ORIGINAL BORING DRILLED TO OBTAIN UNDISTURBED SAMPLES

•OFFSET(S) OF ORIGINAL BORING DRILLED TO OBTAIN UNDISTURBED SAMPLES

DATUM EL. -70.00

BORING & DRIVE TESTS

SCALE 1/8"=1'-0"



BORING & DRIVE TESTS LOCATION PLAN

SCALE 1"= 100'-0"

FOR BORING INFORMATION AND NOTES SEE DRAWING NO. SB-47 AND SB-48

4/20/2009
MAproject
PLOTTER = PLOTTER - RAIL-PS-ENLRL1, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	89	140

DRAWING NO. SB-53

BORING & DRIVE TESTS

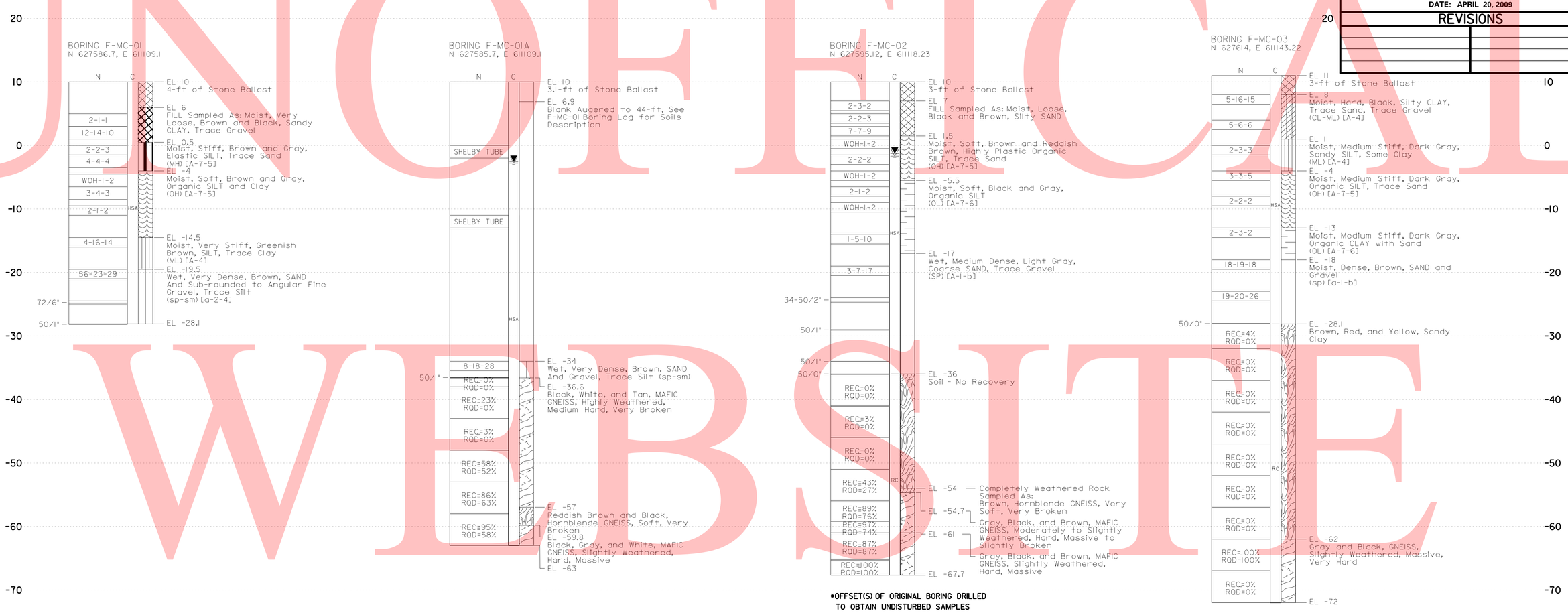
THIRD TRACK

SCALE AS NOTED

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

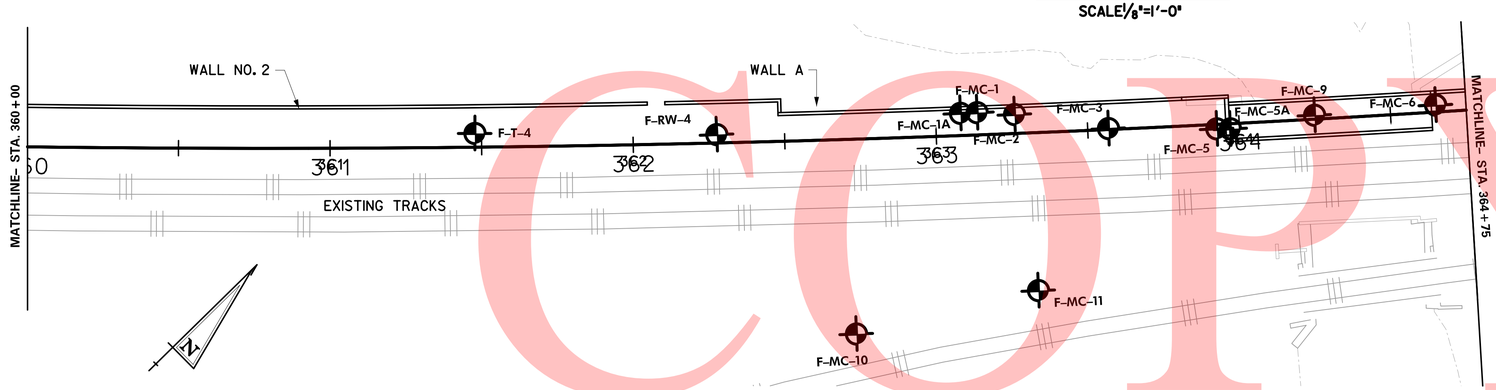
DATE: APRIL 20, 2009

REVISIONS



BORING & DRIVE TESTS
SCALE 1/8"=1'-0"

DATUM EL. -80.00



BORING & DRIVE TESTS LOCATION PLAN
SCALE 1"= 100'-0"

FOR BORING INFORMATION AND NOTES SEE DRAWING NO. SB-47 AND SB-48

4/20/2009
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PREL. TRACING ____ DESIGN ____ CHKD. ____

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CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	90	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

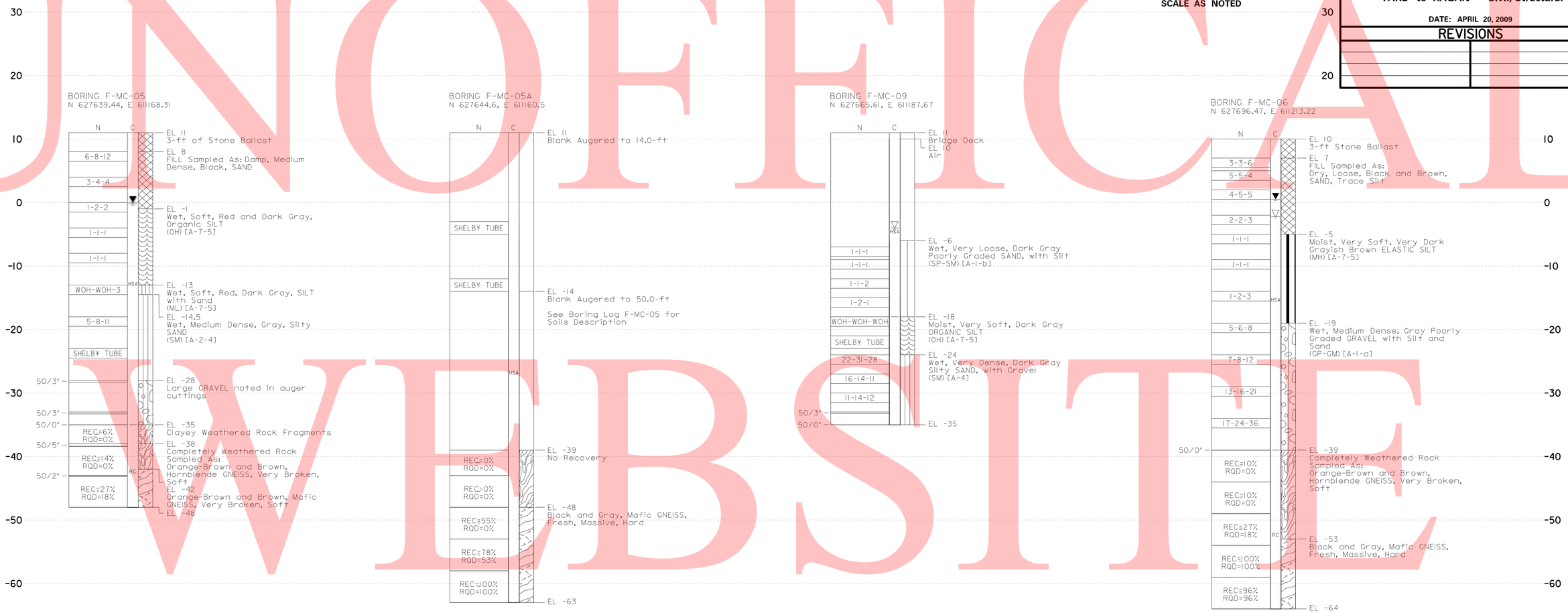
REVISIONS

DRAWING NO. SB-54

BORING & DRIVE TESTS

THIRD TRACK

SCALE AS NOTED

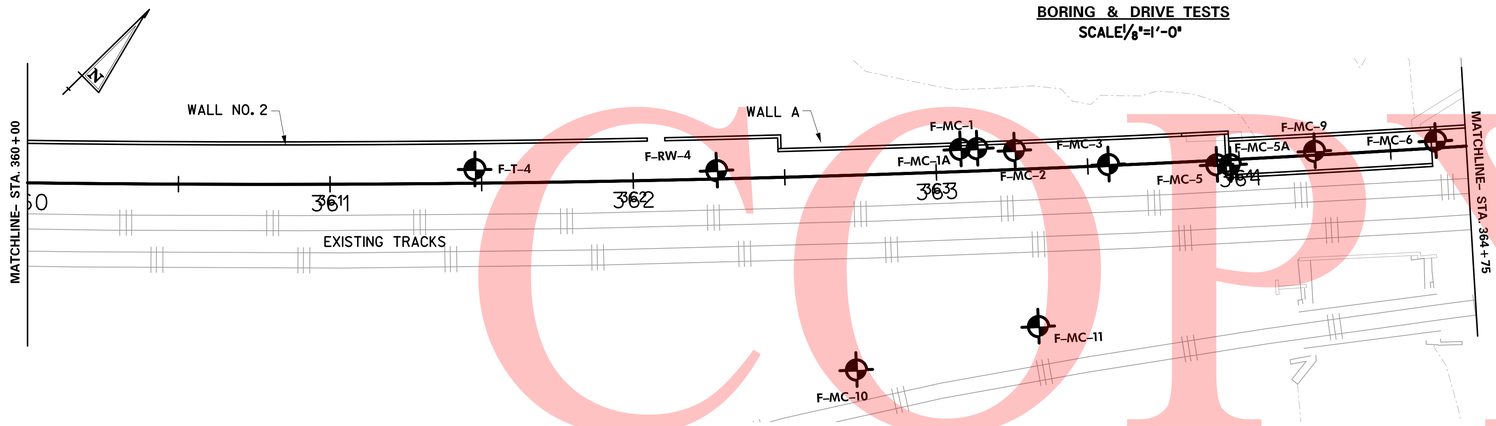


*OFFSET(S) OF ORIGINAL BORING DRILLED TO OBTAIN UNDISTURBED SAMPLES

DATUM EL. -70.00

BORING & DRIVE TESTS

SCALE 1/8"=1'-0"



BORING & DRIVE TESTS LOCATION PLAN

SCALE 1"= 100'-0"

FOR BORING INFORMATION AND NOTES SEE DRAWING NO. SB-47 AND SB-48

UNOFFICIAL WEBSITE COPY

4/20/2009
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PREL. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	91	140

DRAWING NO. SB-55

BORING & DRIVE TESTS

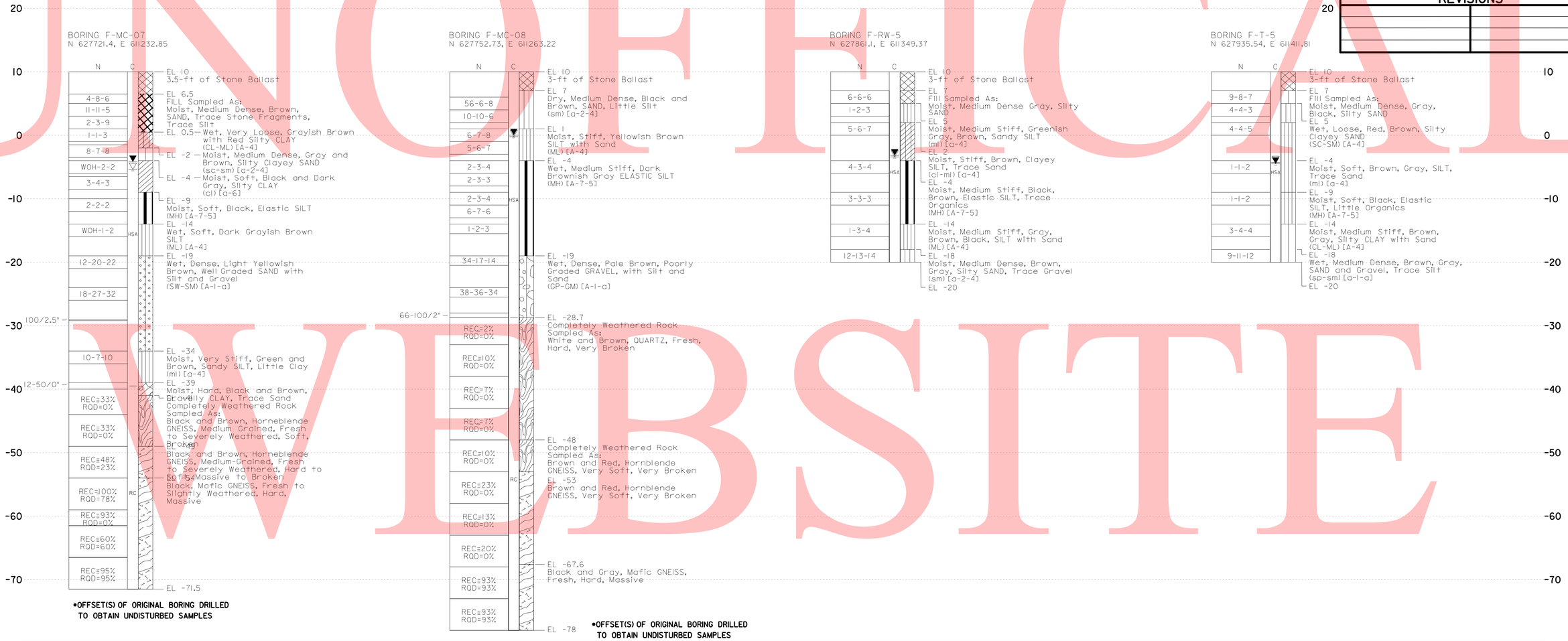
THIRD TRACK

SCALE AS NOTED

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



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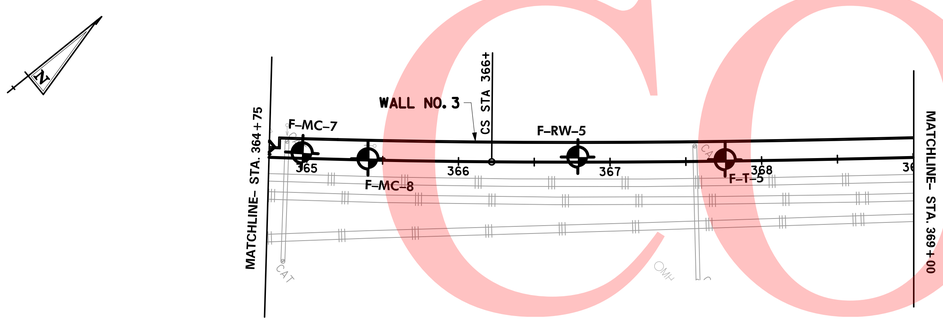
BORING & DRIVE TESTS
SCALE 1/8"=1'-0"



BORING & DRIVE TESTS LOCATION PLAN
SCALE 1"= 50'-0"

FOR BORING INFORMATION AND NOTES SEE DRAWING NO. SB-47 AND SB-48

4/20/2009
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PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	92	140

DRAWING NO. SB-56

BORING & DRIVE TESTS

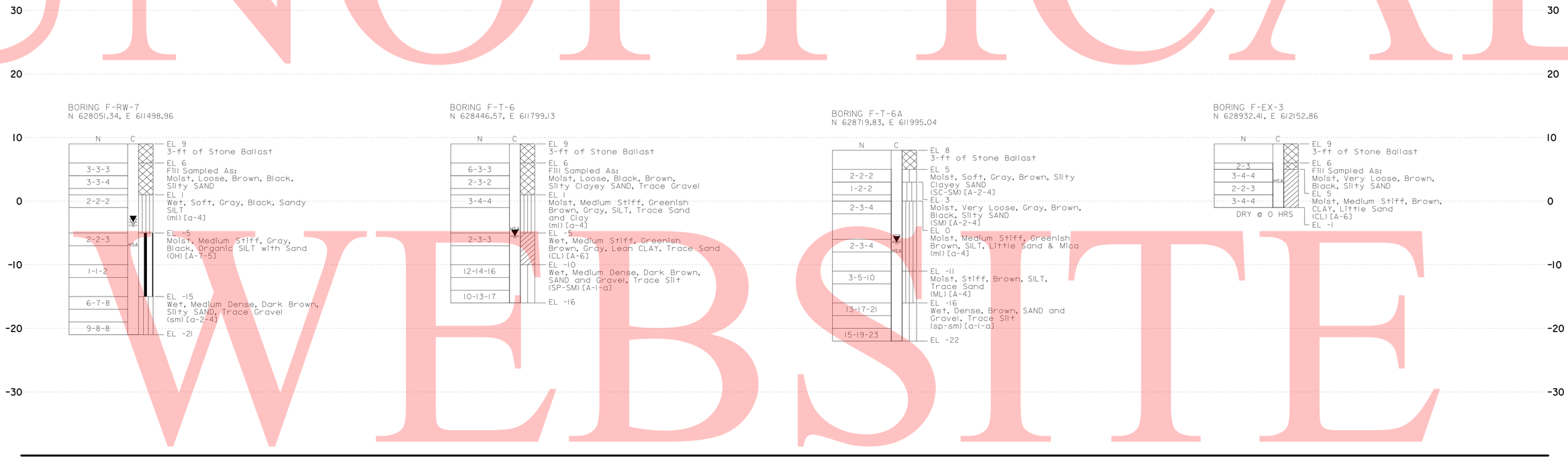
THIRD TRACK

SCALE AS NOTED

NEC COMMUTER RAIL IMPROVE.- DELAWARE YARD to RAGAN - Civil, Structural

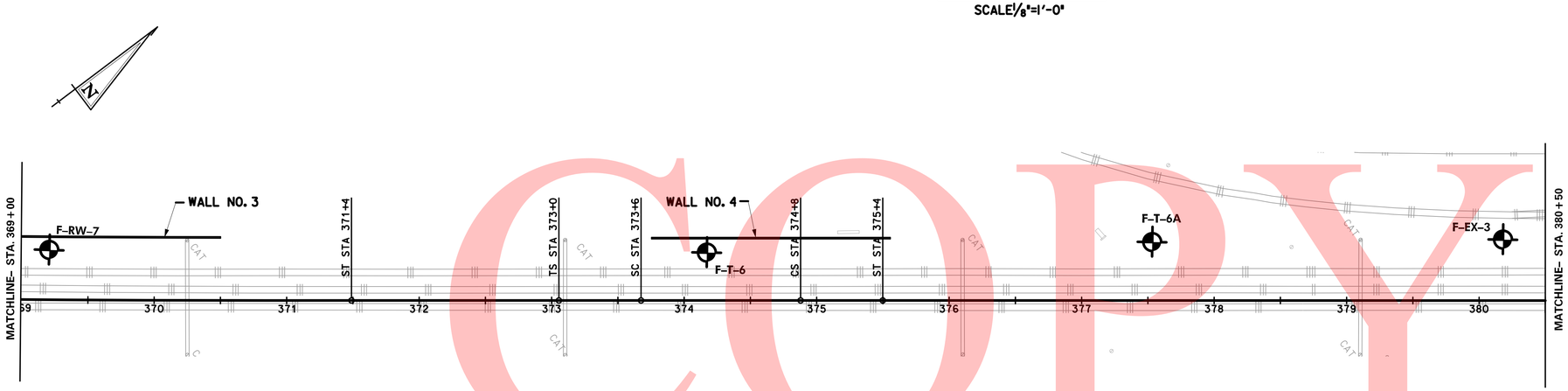
DATE: APRIL 20, 2009

REVISIONS



DATUM EL. -40.00

BORING & DRIVE TESTS
SCALE 1/8"=1'-0"



BORING & DRIVE TESTS LOCATION PLAN
SCALE 1"= 50'-0"

FOR BORING INFORMATION AND NOTES SEE DRAWING NO. SB-47 AND SB-48

4/20/2009
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CHKD.
DESIGN
PRELIM. TRACING

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	93	140

DRAWING NO. SB-57

BORING & DRIVE TESTS

THIRD TRACK

SCALE AS NOTED

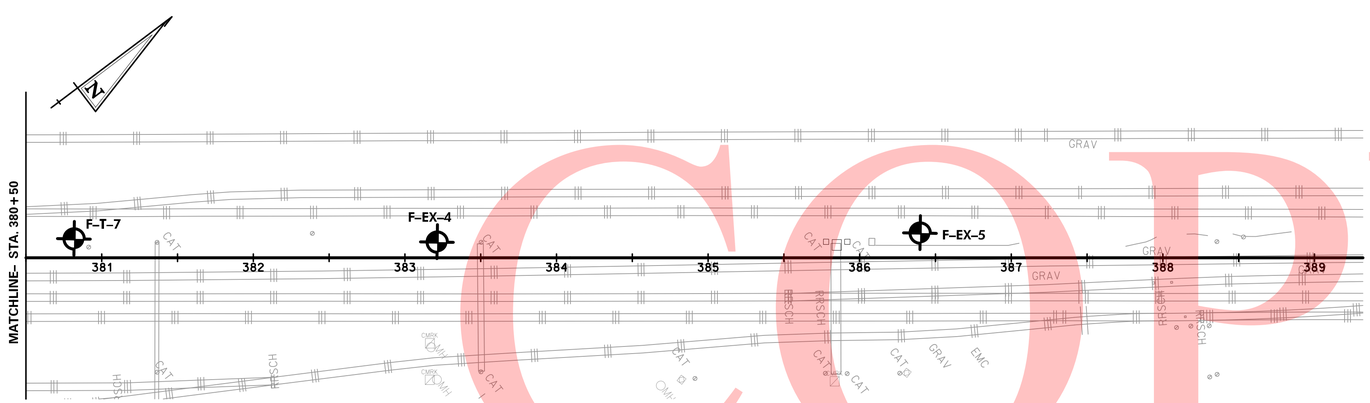
NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DATUM EL. -40.00

BORING & DRIVE TESTS
SCALE 1/8"=1'-0"



BORING & DRIVE TESTS LOCATION PLAN
SCALE 1"= 50'-0"

FOR BORING INFORMATION AND NOTES SEE DRAWING NO. SB-47 AND SB-48

4/20/2009
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CHKD. _____ DESIGN _____ PREL. TRACING _____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	94	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-38

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
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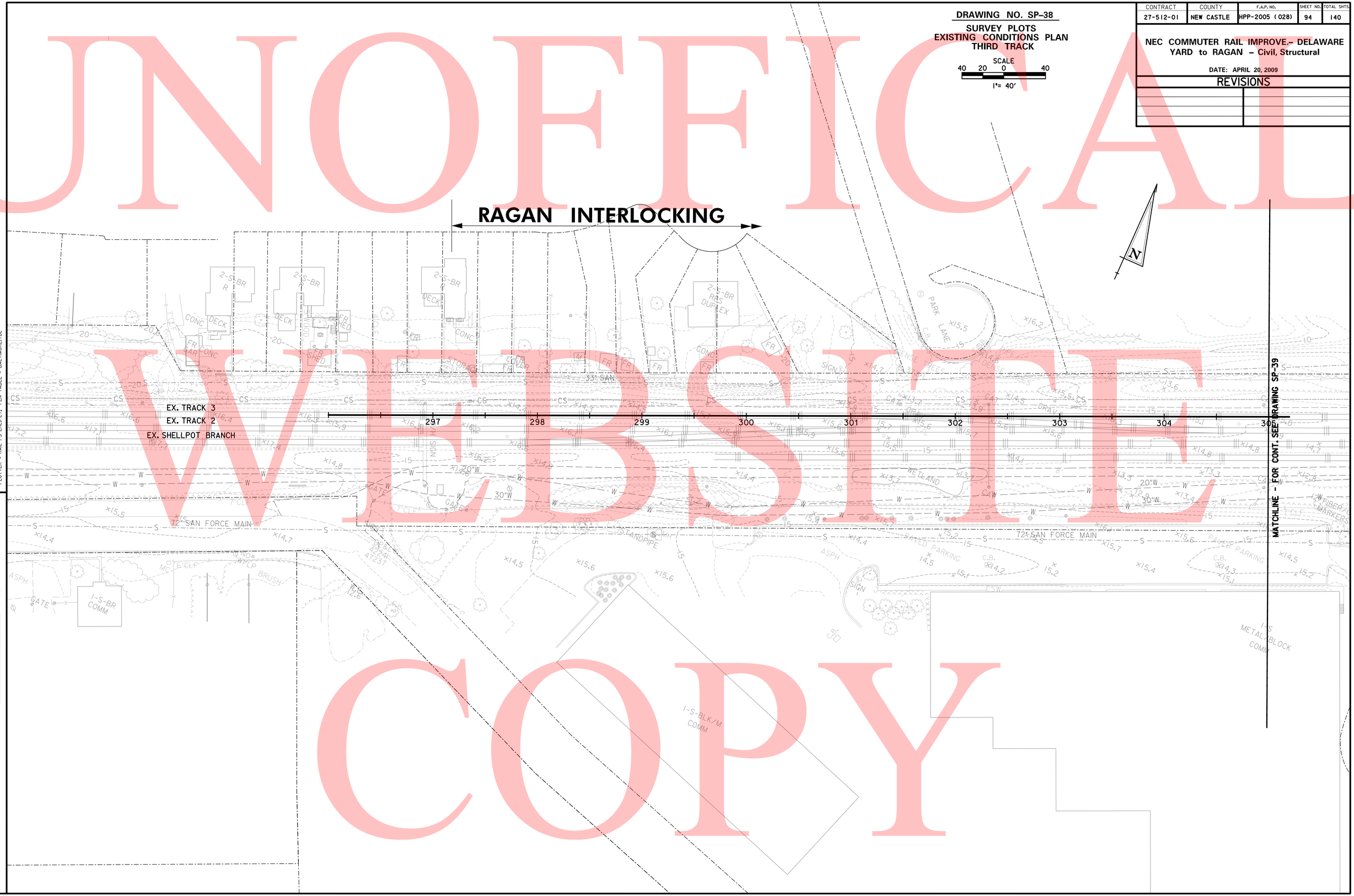
1"= 40'



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PREL. TRACING _____ DESIGN _____ CHKD. _____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	95	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

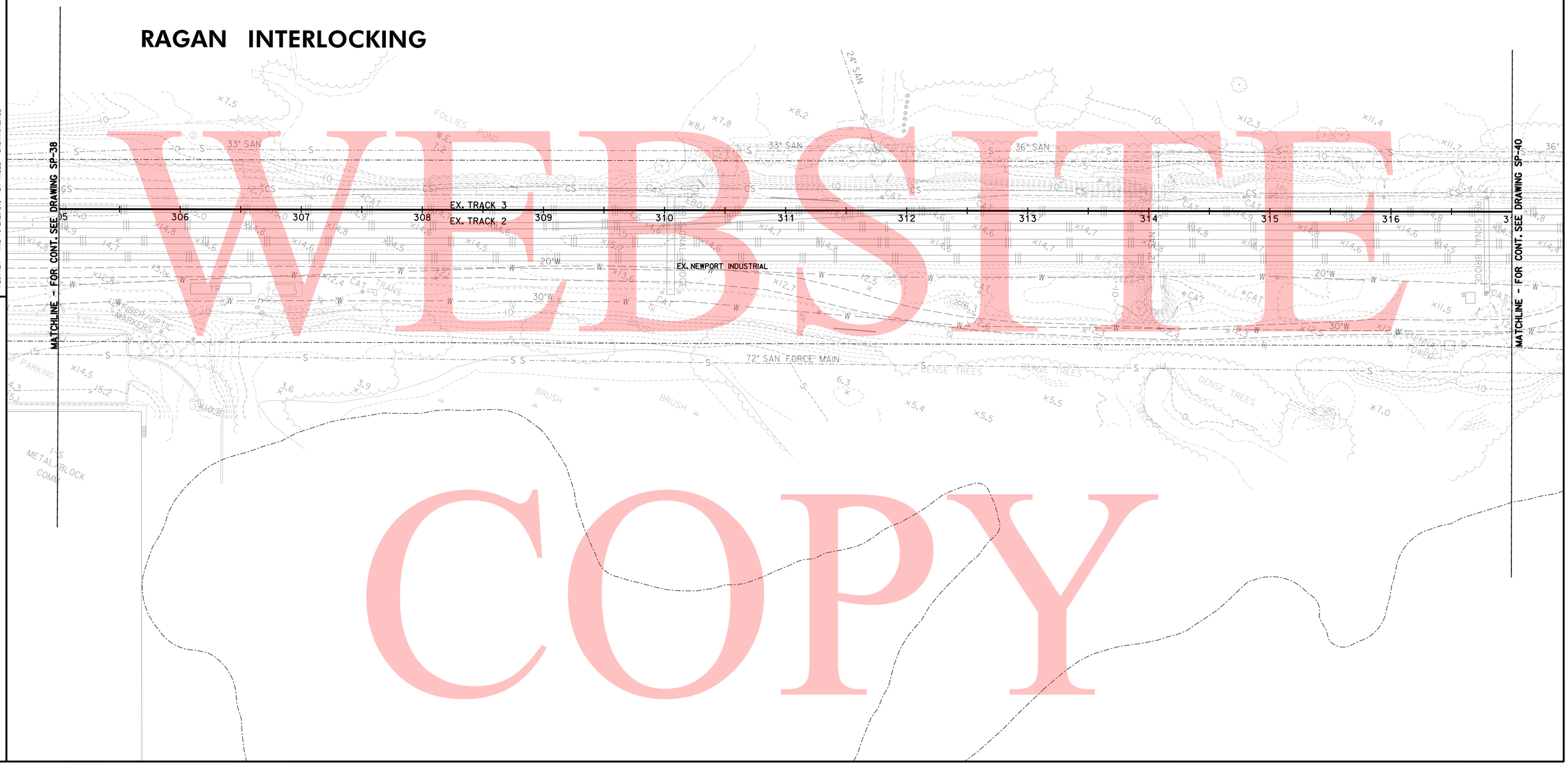
DRAWING NO. SP-39

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'

N

RAGAN INTERLOCKING



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PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	96	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-40

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'

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M:\projects\2007\07052_DTC\Third-Trk\CADD\Plans\SP40DTC.dgn
PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	97	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

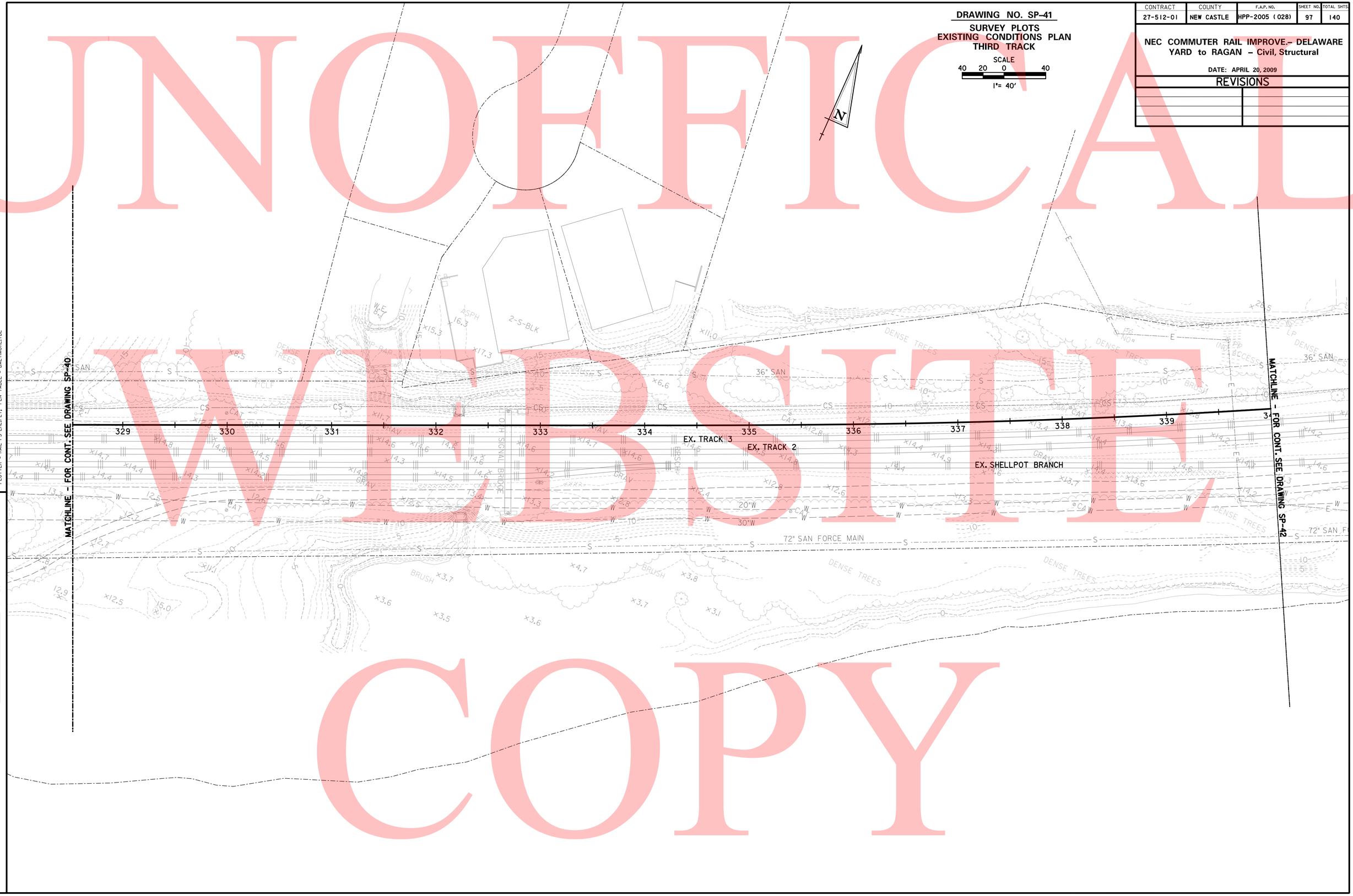
DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-41

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'



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PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	98	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

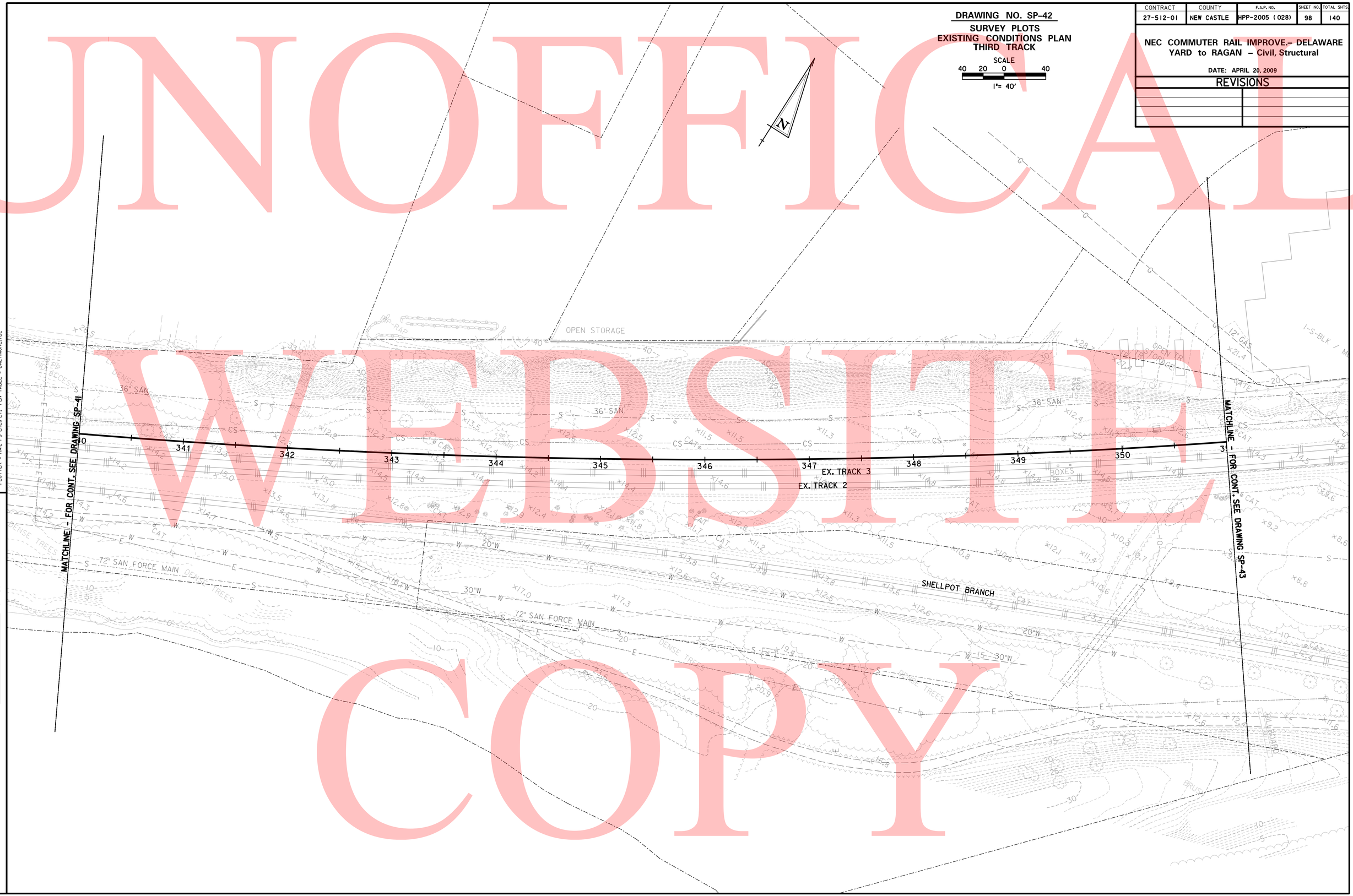
DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-42

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'



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PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	99	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

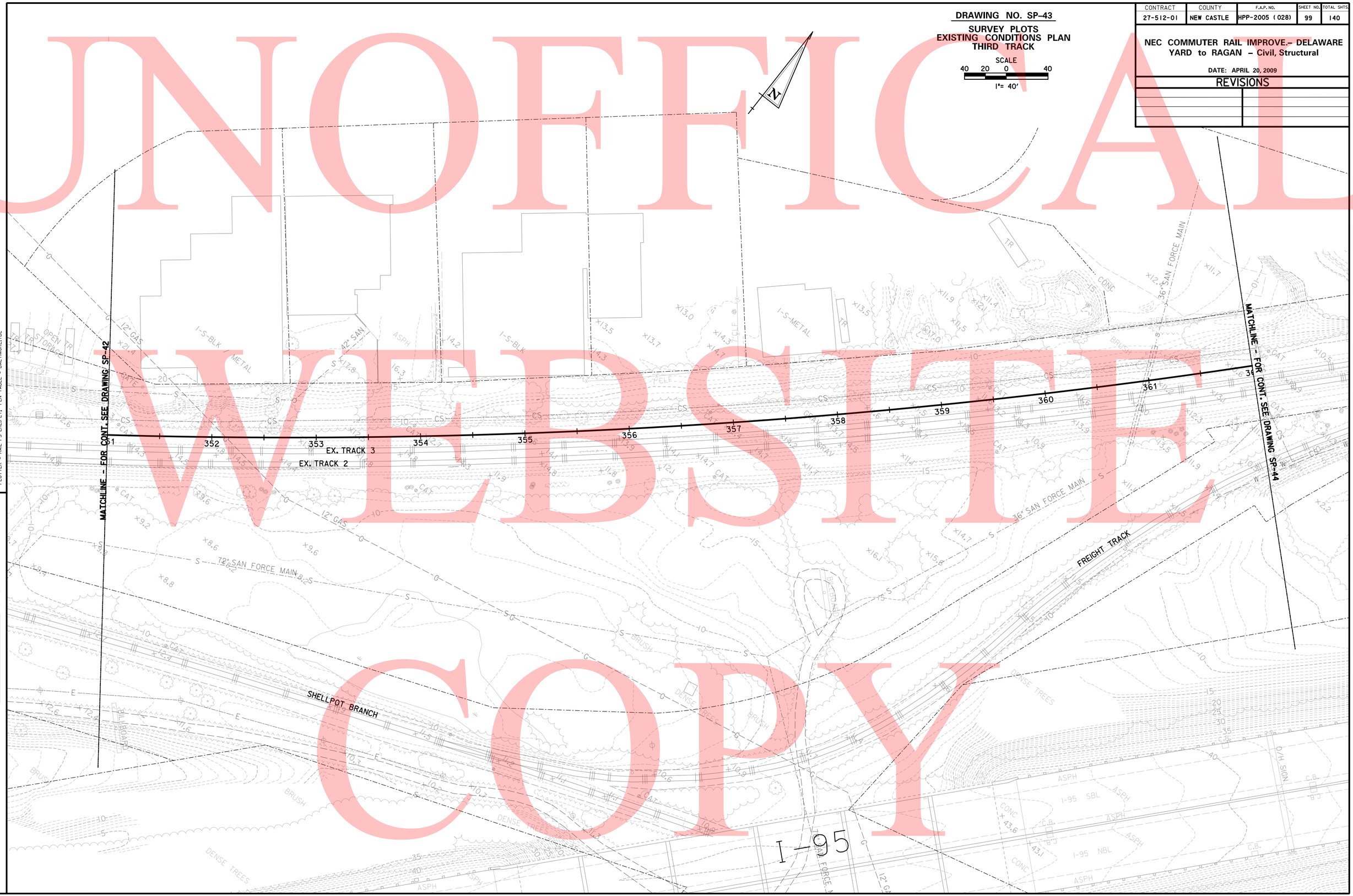
DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-43

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'



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PREL. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	100	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

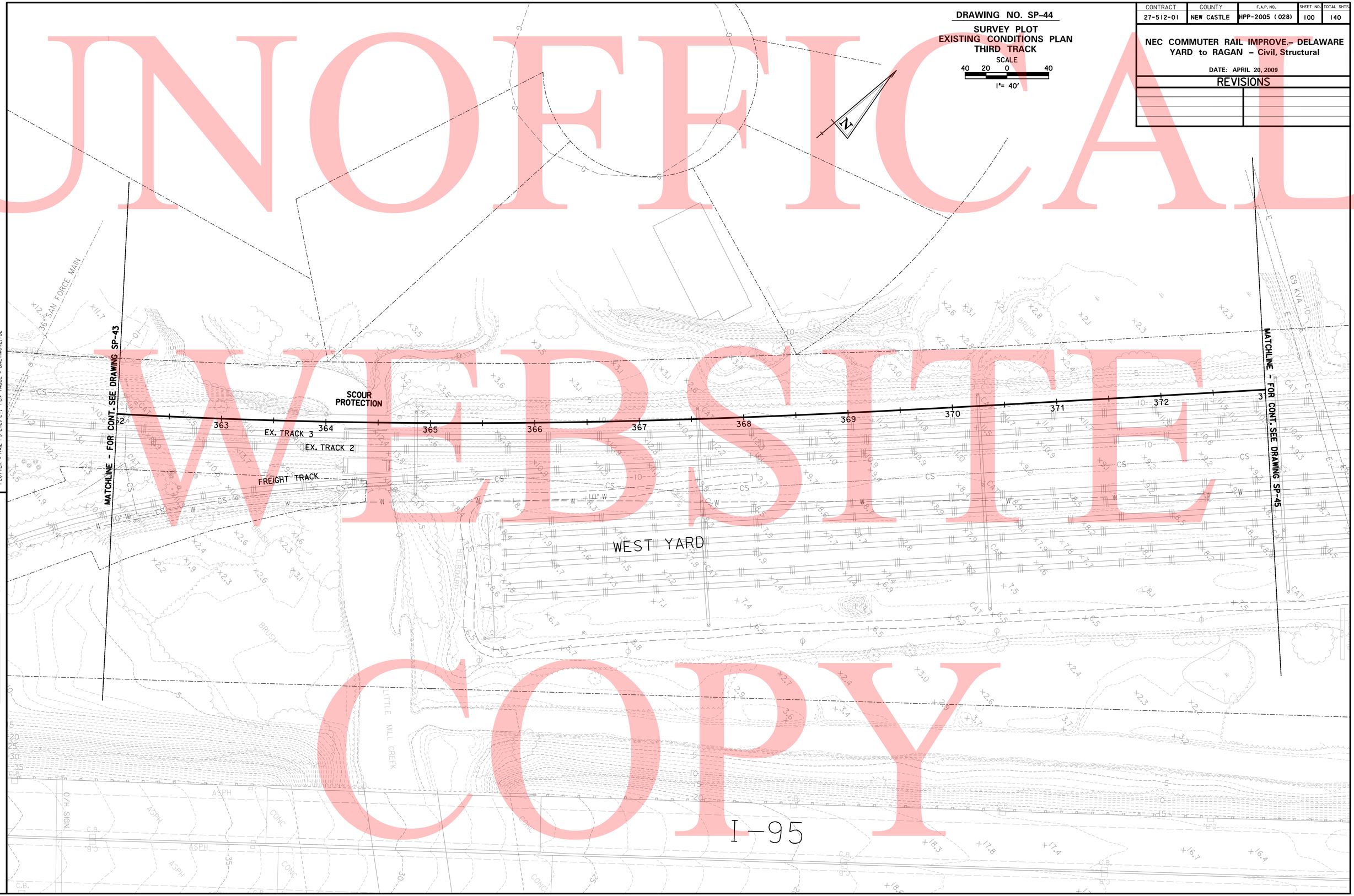
DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-44

SURVEY PLOT
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'



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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	101	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

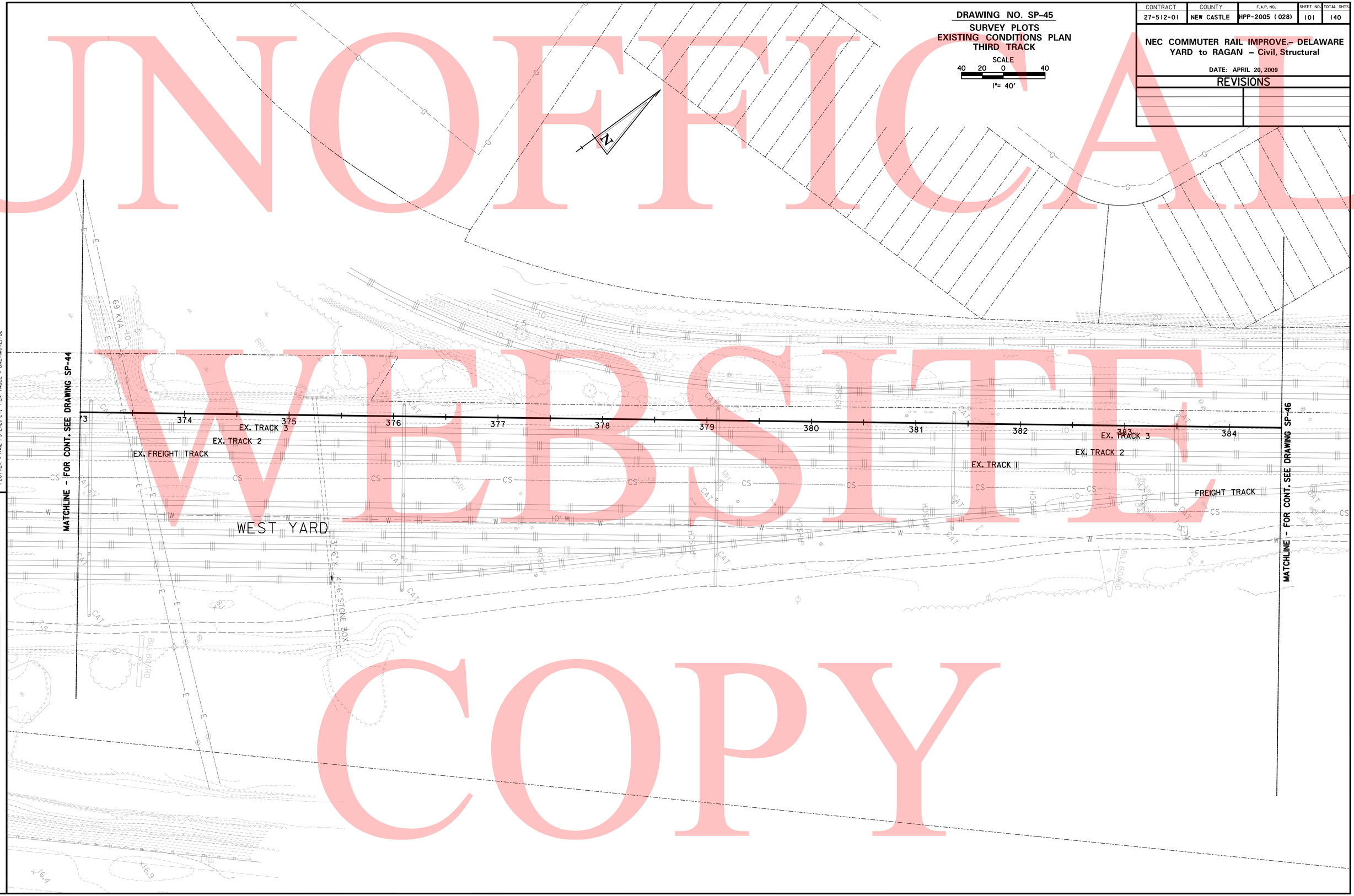
DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-45

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'



UNOFFICIAL WEBSITE COPY

4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	102	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

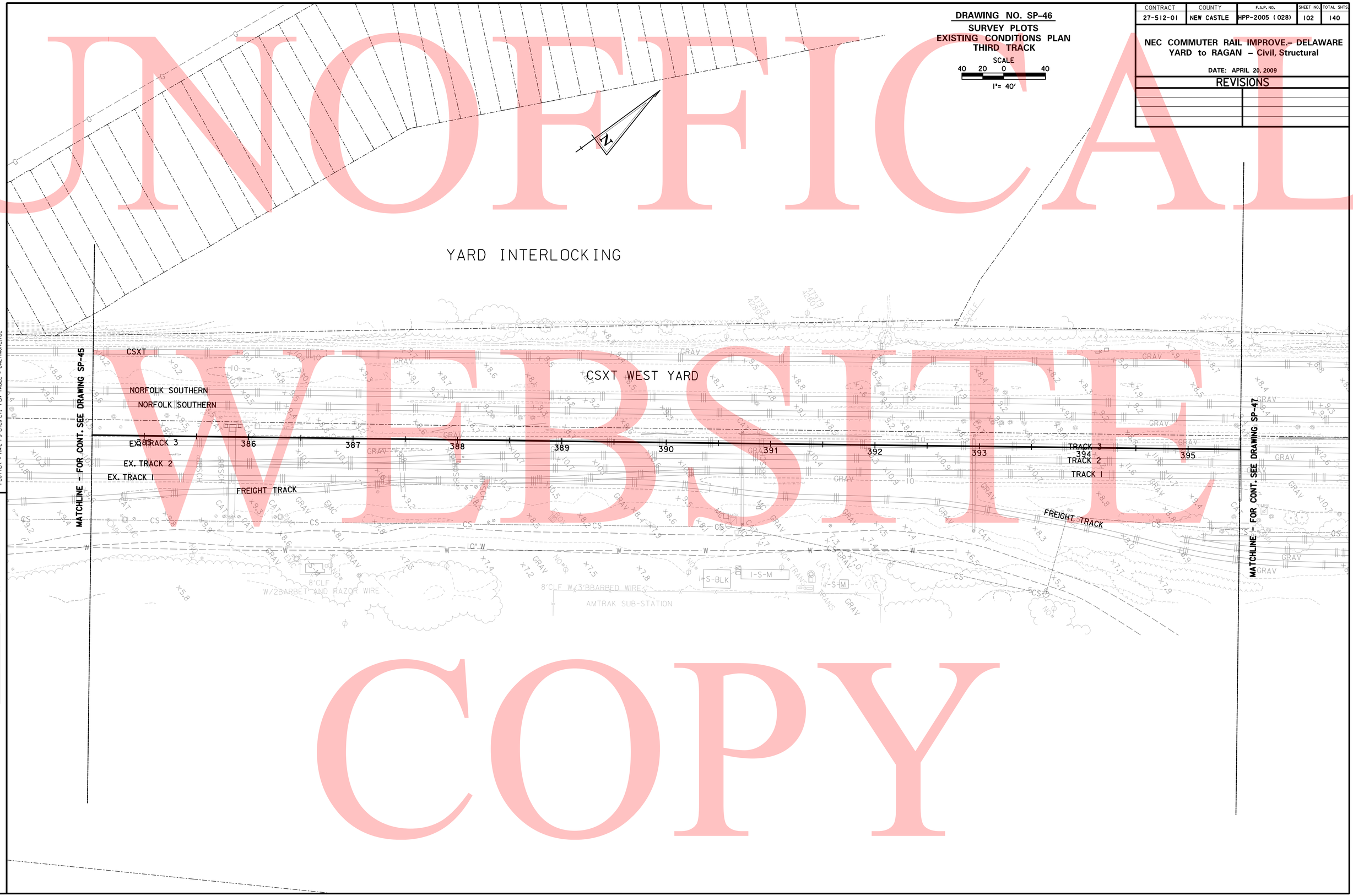
DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-46

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'



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4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	103	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

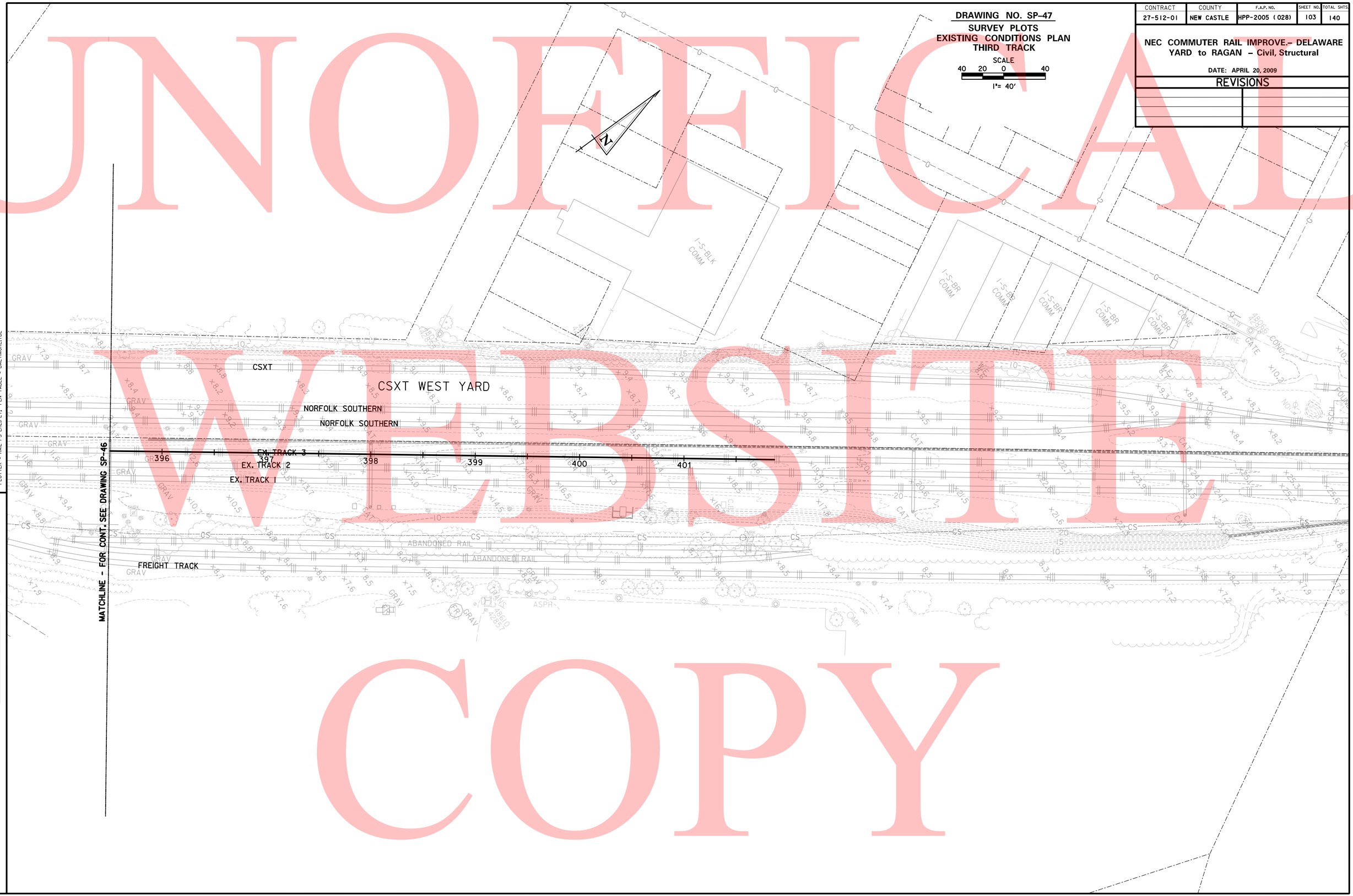
DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. SP-47

SURVEY PLOTS
EXISTING CONDITIONS PLAN
THIRD TRACK

SCALE
40 20 0 40
1"= 40'



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PREL. TRACING _____ DESIGN _____ CHKD. _____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	104	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

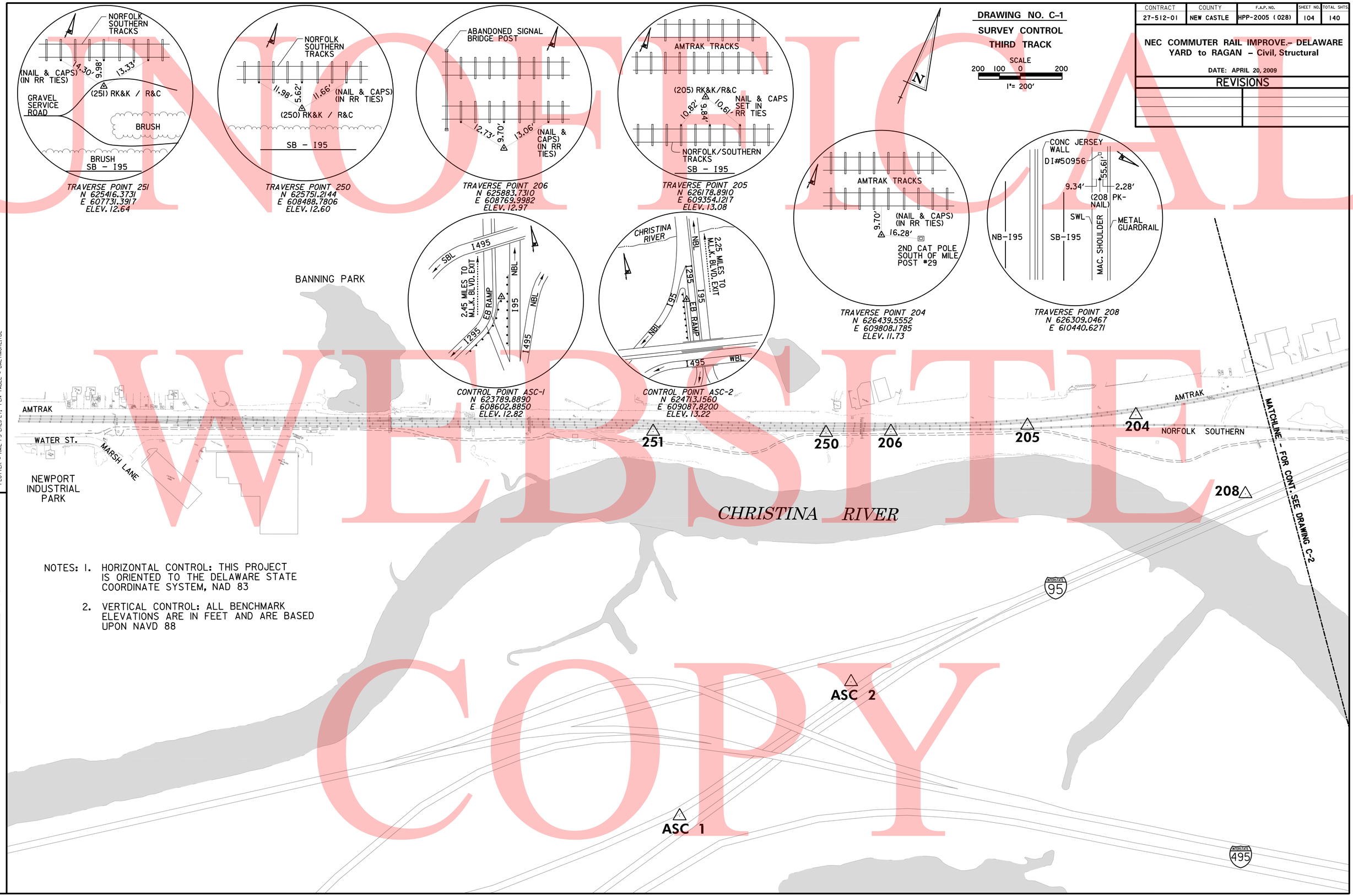
DRAWING NO. C-1

SURVEY CONTROL

THIRD TRACK

SCALE 200 100 0 200

1"= 200'



NOTES: 1. HORIZONTAL CONTROL: THIS PROJECT IS ORIENTED TO THE DELAWARE STATE COORDINATE SYSTEM, NAD 83

2. VERTICAL CONTROL: ALL BENCHMARK ELEVATIONS ARE IN FEET AND ARE BASED UPON NAVD 88

4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	105	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. C-2

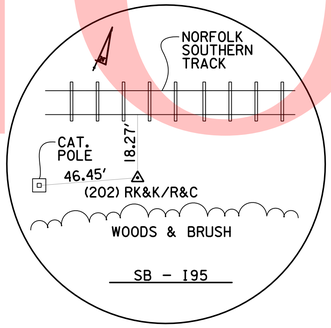
SURVEY CONTROL

THIRD TRACK

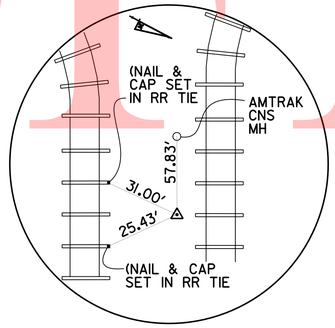
SCALE

200 100 0 200

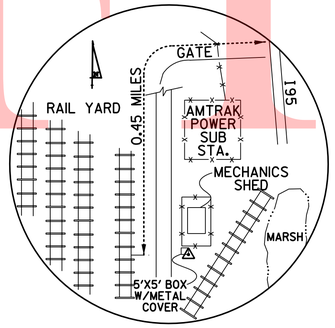
1"= 200'



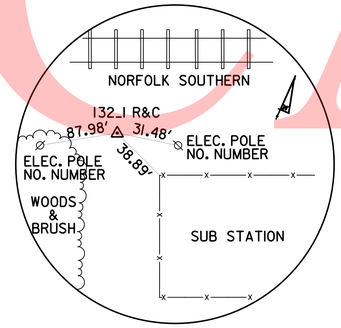
TRAVERSE POINT 202_1
N 626943.4825
E 610513.8655
ELEV. 11.73



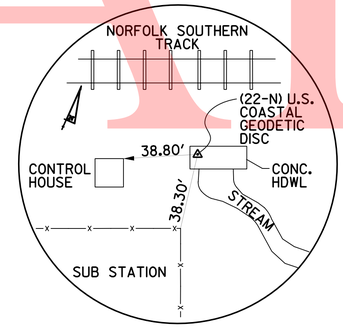
TRAVERSE POINT 201_1
N 627513.0426
E 611117.4605
ELEV. 11.22



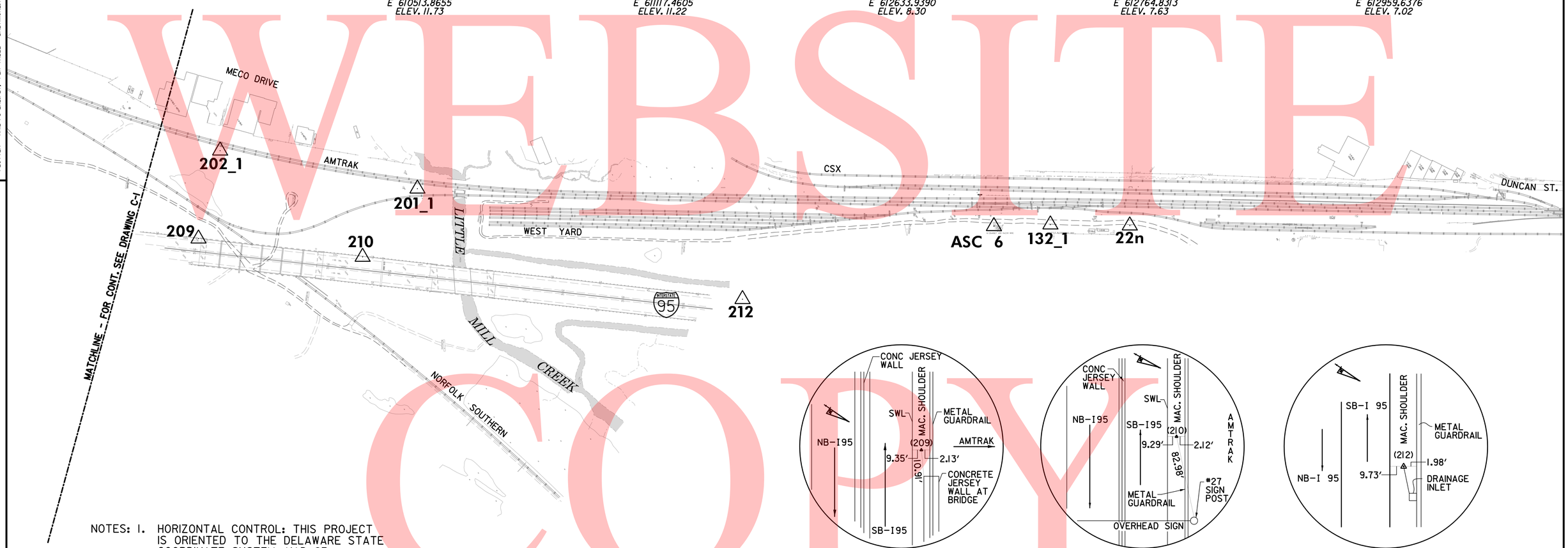
CONTROL POINT ASC-6
N 629354.8800
E 612633.9390
ELEV. 8.30



TRAVERSE POINT 132_1
N 629547.8205
E 612764.8313
ELEV. 7.63



TRAVERSE POINT 22n
N 629811.4262
E 612959.6376
ELEV. 7.02



TRAVERSE POINT 209
N 626659.0155
E 610756.5486

TRAVERSE POINT 210
N 627164.8603
E 611213.8936

TRAVERSE POINT 212
N 628336.2392
E 612272.1969

NOTES: 1. HORIZONTAL CONTROL: THIS PROJECT IS ORIENTED TO THE DELAWARE STATE COORDINATE SYSTEM, NAD 83

2. VERTICAL CONTROL: ALL BENCHMARK ELEVATIONS ARE IN FEET AND ARE BASED UPON NAVD 88

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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

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CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	106	140

DRAWING NO. C-3

BASELINE OF CONSTRUCTION DATA

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

CURVE/PT. NO.		STATION	DELTA	DEGREE OF CURVE	RADIUS	TANGENT	LENGTH	NORTH	EAST
BASELINE OF CONSTRUCTION									
	POT	296+00.00						624,386.7784	605,268.9308
	T.S.	306+77.13						624,823.6197	606,253.5014
NT3-0B	S.P.I.	307+18.45	0°00'05.89"LT				62.00	624,863.2643	606,342.8540
	S.C.	307+39.13						624,848.7649	606,310.1733
NT3-0	P.I.	307+74.88	0°00'13.59"LT	0°00'19.00"	1,085,604.24	35.75	71.51	624,863.2643	606,342.8540
	C.S.	308+10.64						624,877.7687	606,375.5323
NT3-0A	S.P.I.	308+31.31	0°00'05.89"LT				62.00	624,886.1553	606,394.4295
	S.T.	308+72.64						624,902.9199	606,432.2017
	T.S.	321+86.26						625,435.8223	607,632.8804
SNT3-1B	S.P.I.	322+27.59	0°00'08.06"LT				62.00	625,452.5868	607,670.6526
	S.C.	322+48.26						625,460.9747	607,689.5492
CNT3-1	P.I.	326+18.15	0°01'30.80"LT	0°00'26.00"	793,326.18	174.61	349.22	625,531.8078	607,849.1447
	C.S.	325+97.48						625,602.7250	608,008.7027
SNT3-1A	S.P.I.	326+18.15	0°00'08.06"LT				62.00	625,611.1212	608,027.5956
	S.T.	326+59.48						625,627.9053	608,065.3591
	T.S.	332+97.97						625,887.2258	608,648.8164
SNT3-5A	S.P.I.	335+87.26	1°39'49.20"LT				434.00	626,004.7201	608,913.1724
	S.C.	337+31.97						626,067.3183	609,043.6690
CNT3-5	P.I.	342+30.21	7°37'41.79"LT	0°46'00.00"	7,473.42	498.24	994.99	626,282.8080	609,492.8943
	C.S.	347+26.96						626,556.0234	609,909.5388
SNT3-6A	S.P.I.	348+54.84	2°05'50.36"LT				248.00	626,626.1450	610,016.4720
	S.C.	349+74.96						626,695.6660	610,114.4704
CNT3-6	P.I.	358+03.35	15°13'48.04"LT	0°55'29.00"	6,196.07	828.38	1646.98	627,174.9701	610,790.1083
	C.S.	366+21.94						627,814.9269	611,316.1067
SNT3-7A	S.P.I.	367+97.71	2°26'11.91"LT				527.00	627,950.7115	611,427.7118
	S.T.	371+48.94						628,231.3411	611,639.0363
	T.S.	373+05.48						628,356.3871	611,733.2005
NT3-8B	S.P.I.	373+46.81	0°00'08.06"RT				62.00	628,389.3992	611,758.0598
	S.C.	373+67.48						628,405.9143	611,770.4973
NT3-8	P.I.	374+27.71	0°00'31.32"RT	0°00'26.00"	793,326.18	60.22	120.44	628,454.0225	611,806.7235
	C.S.	374+87.93						628,502.1214	611,842.9621
NT3-8A	S.P.I.	375+08.61	0°00'08.06"RT				62.00	628,518.6346	611,855.4021
	S.T.	375+49.93						628,551.6410	611,880.2691
	T.S.	389+43.29						629,664.5114	612,718.7026
NT3-9B	S.P.I.	389+84.61	0°00'23.87"LT				62.00	629,697.5178	612,743.5695
	S.C.	390+05.29						629,714.0291	612,756.0120
NT3-9	P.I.	390+90.94	0°02'11.91"LT	0°01'17.00"	267,876.37	85.66	171.31	629,782.4434	612,807.5522
	C.S.	391+76.60						629,850.8997	612,859.0365
NT3-9A	S.P.I.	391+97.27	0°00'23.87"LT				62.00	629,867.4247	612,871.4609
	S.T.	392+38.60						629,900.4527	612,896.2991
	T.S.	395+32.71						630,135.5113	613,073.0708
NT3-10B	S.P.I.	395+74.04	0°00'31.93"RT				62.00	630,168.5394	613,097.9090
	S.C.	395+94.71						630,185.0610	613,110.3378
NT3-10	P.I.	396+94.63	0°03'25.83"RT	0°01'43.00"	200,257.10	99.92	199.83	630,264.9181	613,170.3890
	C.S.	397+94.54						630,344.6928	613,230.5497
NT3-10A	S.P.I.	398+15.22	0°00'31.93"RT				62.00	630,361.2020	613,242.9949
	S.T.	398+56.54						630,394.1976	613,267.8763
	P.O.T.	401+86.54						630,657.6783	613,466.5623

NOTES: 1. HORIZONTAL CONTROL: THIS PROJECT IS ORIENTED TO THE DELAWARE STATE COORDINATE SYSTEM, NAD 83

2. VERTICAL CONTROL: ALL BENCHMARK ELEVATIONS ARE IN FEET AND ARE BASED UPON NAVD 88

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PLOTTER = RAIL-PS-ENL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	107	140

DRAWING NO. CA-1

CONTRACTOR ACCESS PLAN - 1

THIRD TRACK

SCALE

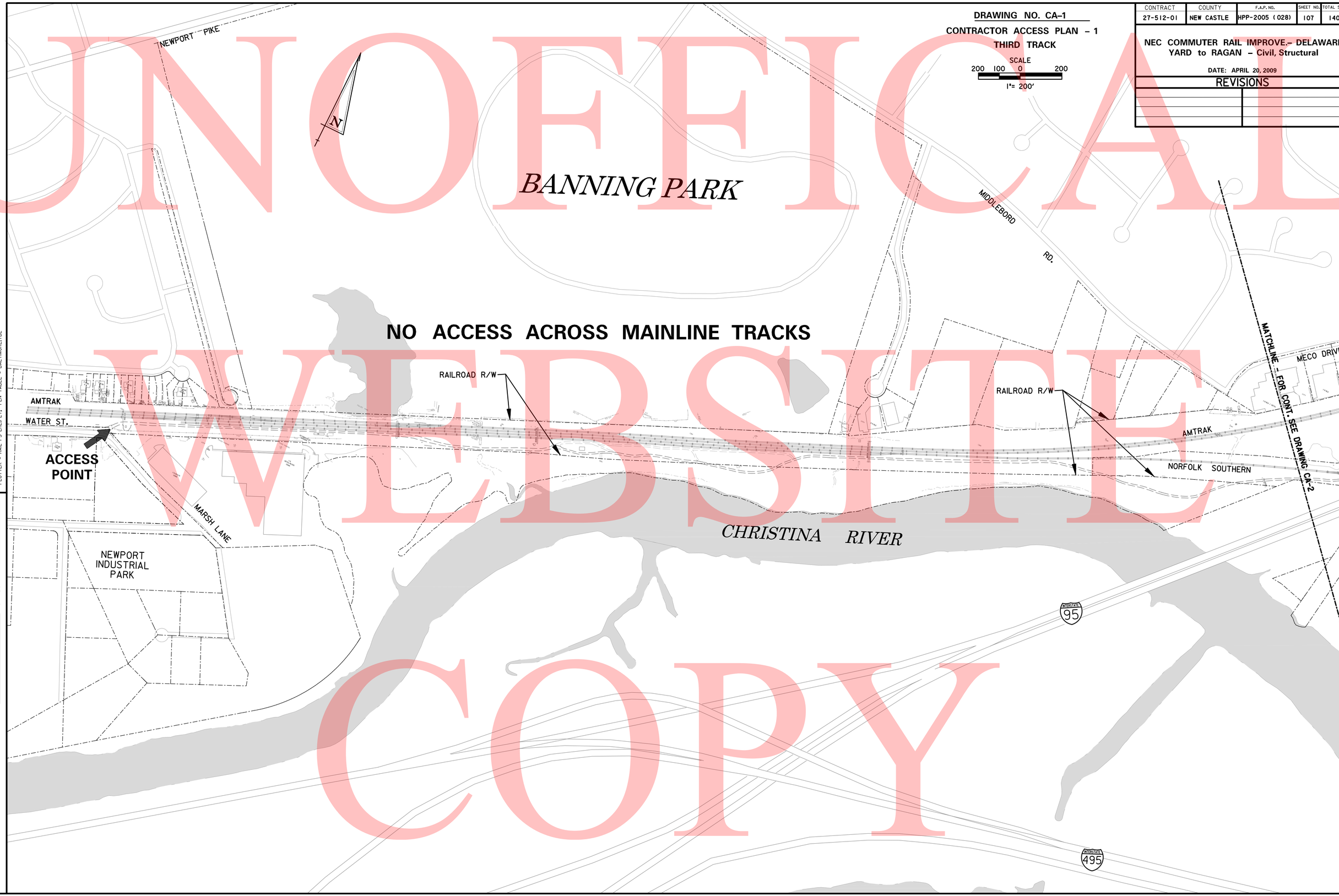
200 100 0 200

1"= 200'

NEC COMMUTER RAIL IMPROVE.- DELAWARE YARD to RAGAN - Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



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PREL. TRACING _____ DESIGN _____ CHKD. _____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	108	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. CA-2

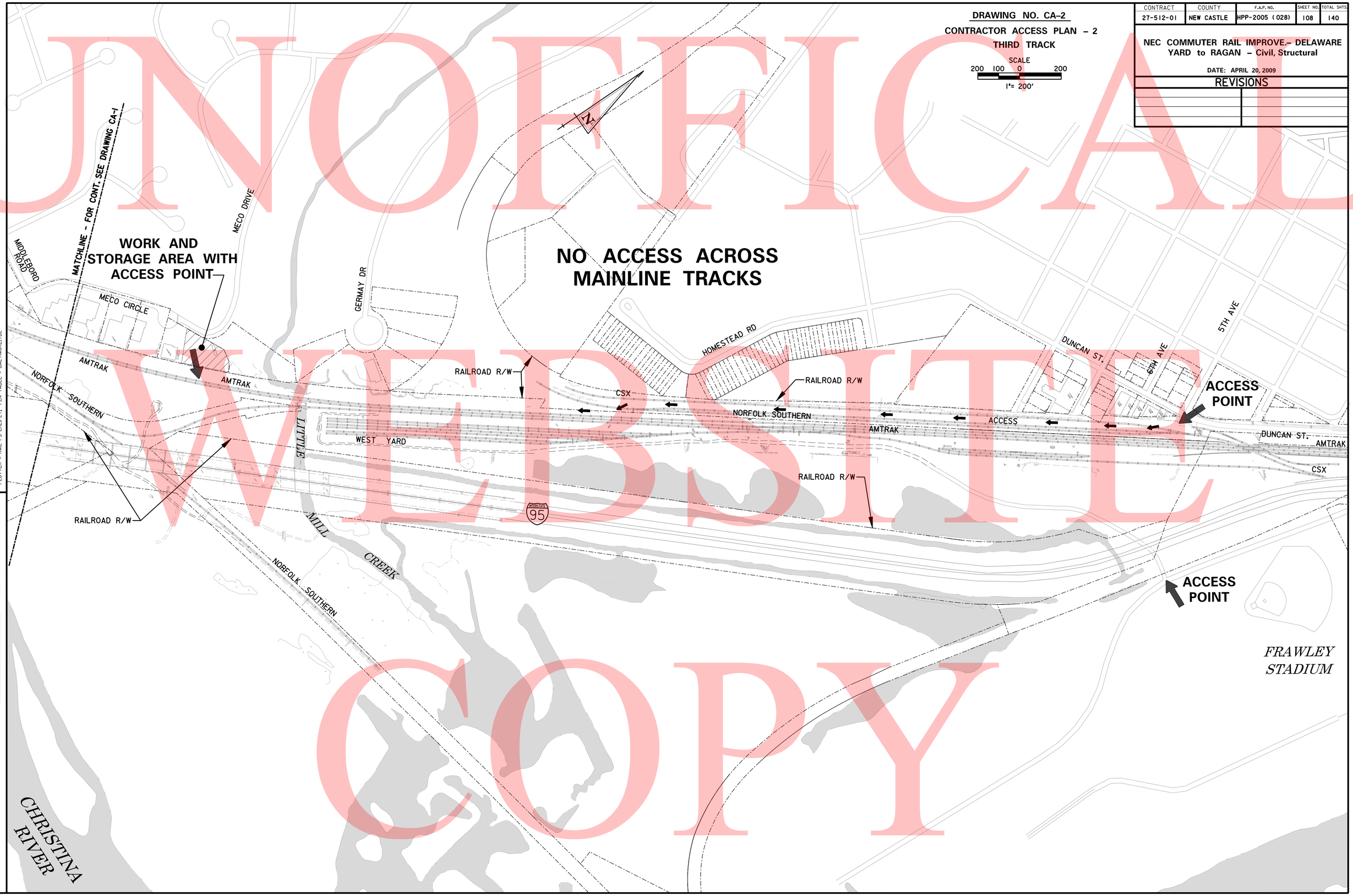
CONTRACTOR ACCESS PLAN – 2

THIRD TRACK

SCALE

200 100 0 200

1"= 200'



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4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	109	140

DRAWING NO. ECP-38

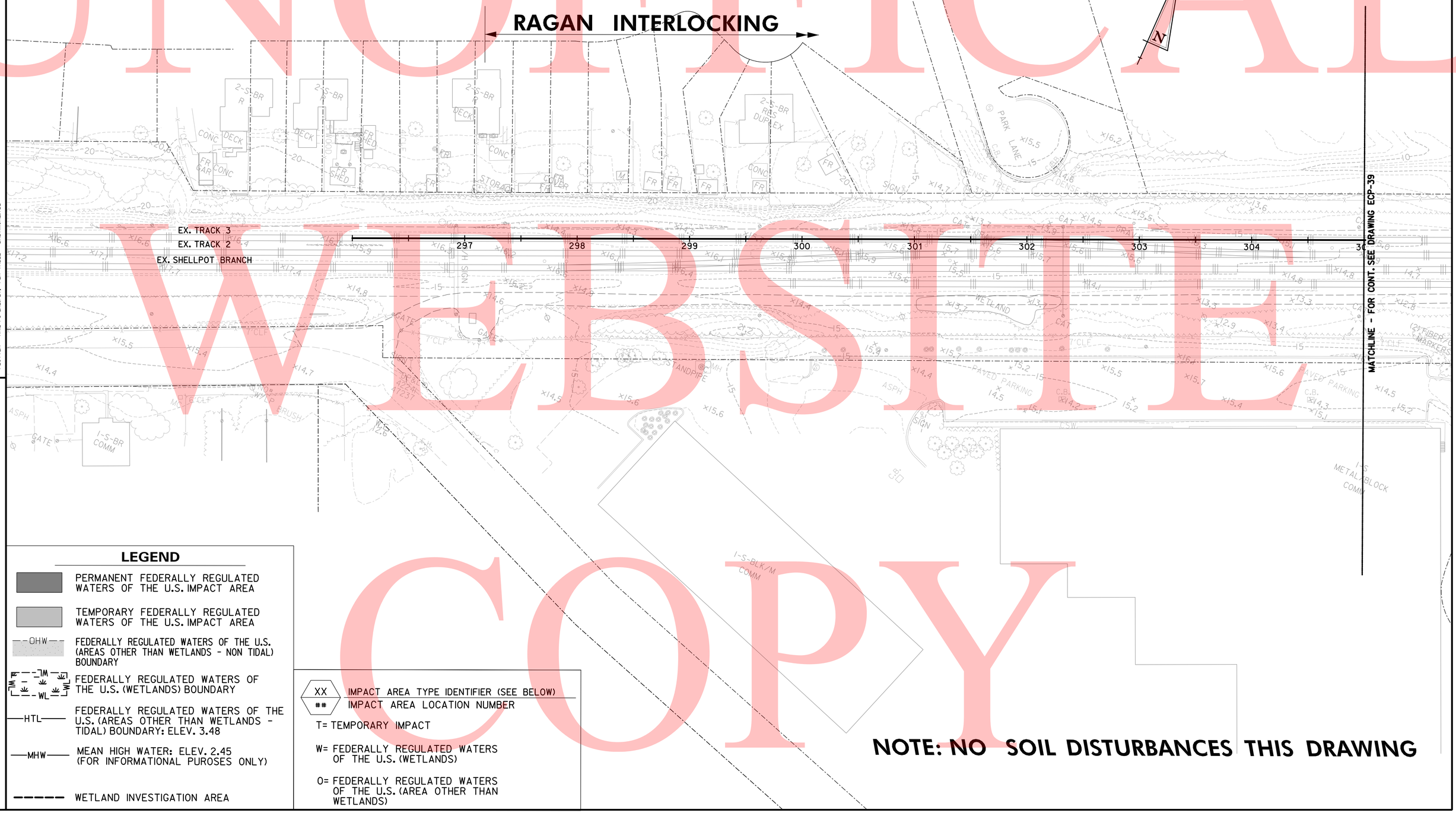
ENVIRONMENTAL COMPLIANCE PLAN
STA. 296+00 TO STA. 305+00

SCALE
40 20 0 40
1"= 40'

NEC COMMUTER RAIL IMPROVE.- DELAWARE YARD to RAGAN - Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- WL — FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)
— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

NOTE: NO SOIL DISTURBANCES THIS DRAWING

4/21/2009
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PLOTTER = RAIL_PS-BW.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	110	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

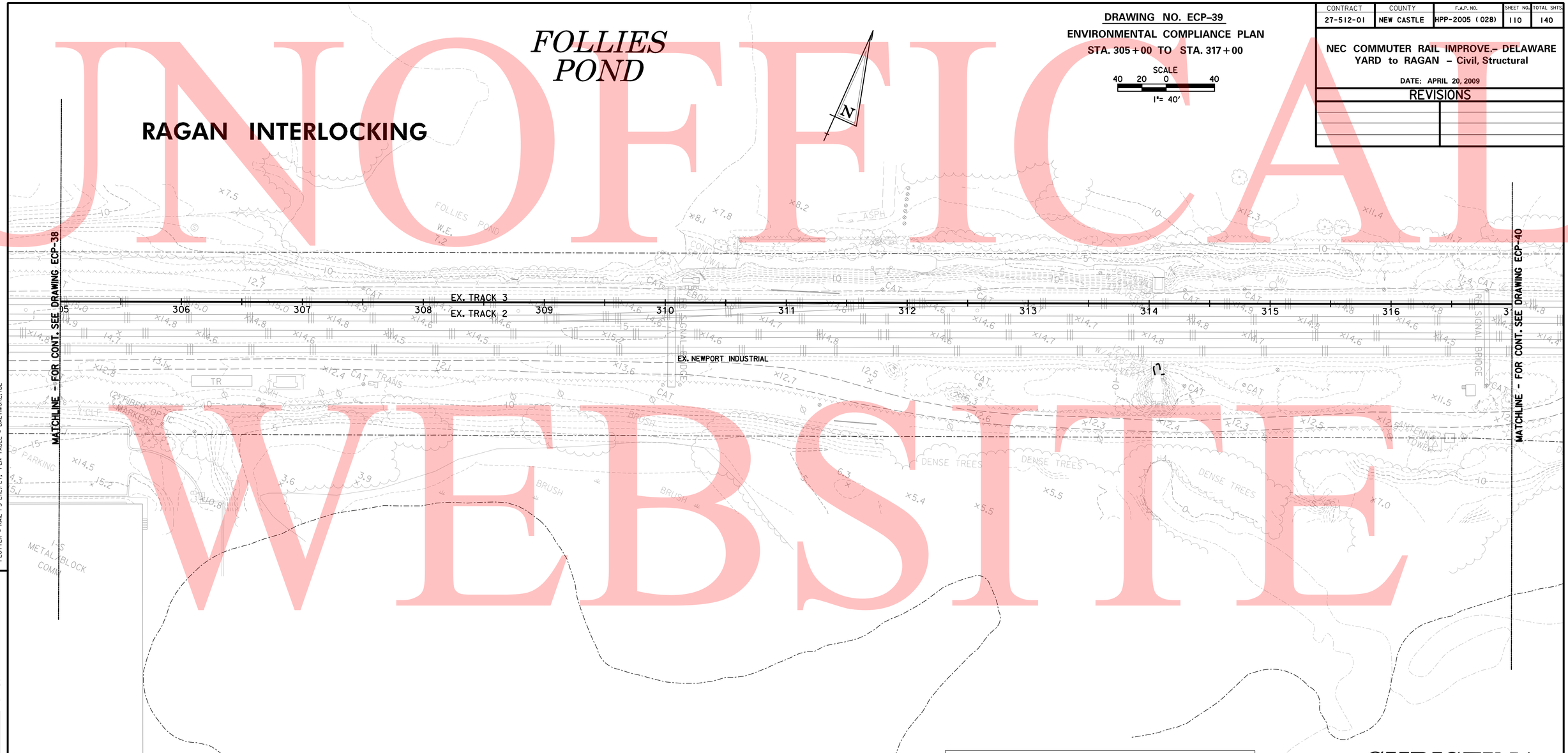
DRAWING NO. ECP-39

ENVIRONMENTAL COMPLIANCE PLAN

STA. 305+00 TO STA. 317+00

SCALE 40 20 0 40

1"= 40'



LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- W, WL — FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)

— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

NOTE: NO SOIL DISTURBANCES THIS DRAWING

4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	111	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. ECP-40

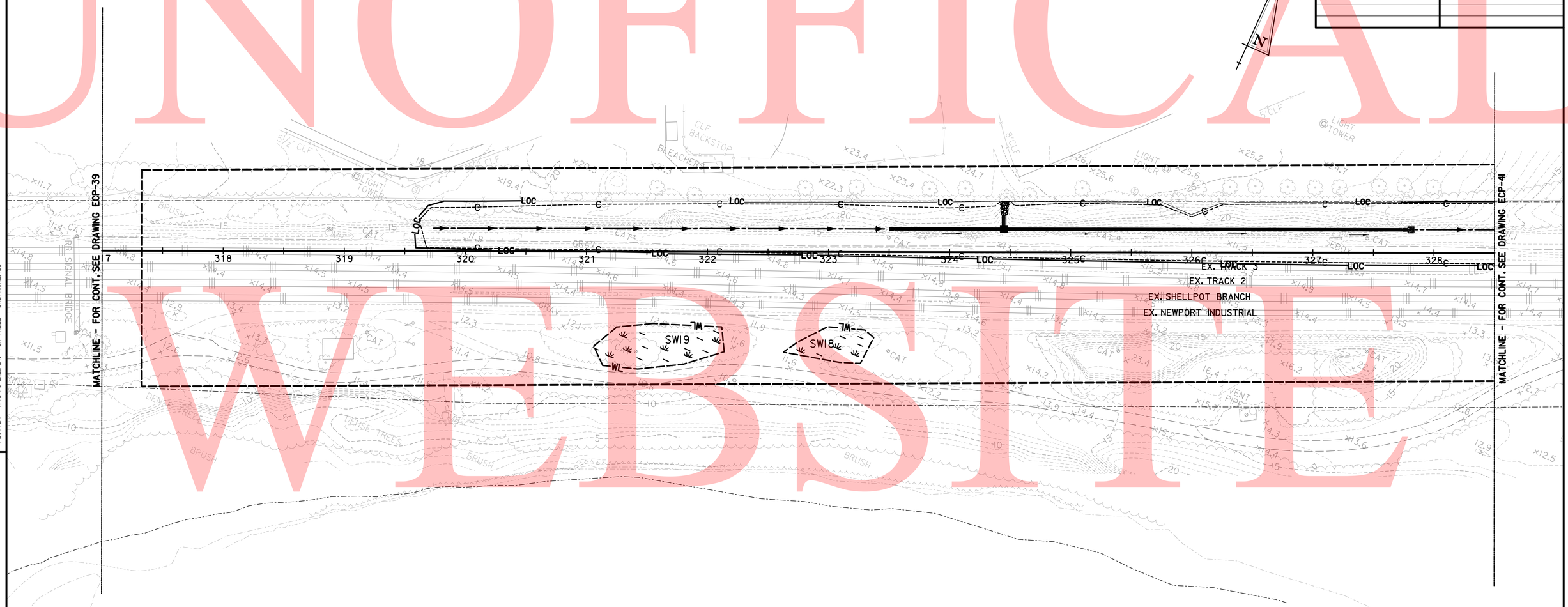
ENVIRONMENTAL COMPLIANCE PLAN

STA. 317+00 TO STA. 328+50

SCALE 40 20 0 40

1"= 40'

NOTE: NO IMPACTS TO THE WATERS OF THE U.S. THIS DRAWING



CHRISTINA RIVER

WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
sw18-1	625432.583288	607799.740057
sw18-2	625435.315905	607790.488618
sw18-3	625425.248662	607761.277437
sw18-4	625404.188353	607744.159350
sw18-5	625391.223398	607736.376632
sw18-6	625402.338273	607782.056027
sw18-7	625408.532043	607798.245936
sw19-1	625371.553983	607691.704249
sw19-2	625389.651588	607681.456527
sw19-3	625368.974664	607628.533064
sw19-4	625353.825981	607601.791736
sw19-5	625332.260080	607591.692672
sw19-6	625320.500762	607604.548711
sw19-7	625329.451195	607632.161659
sw19-8	625348.410495	607664.962432

LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- WL — FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)

— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	112	140

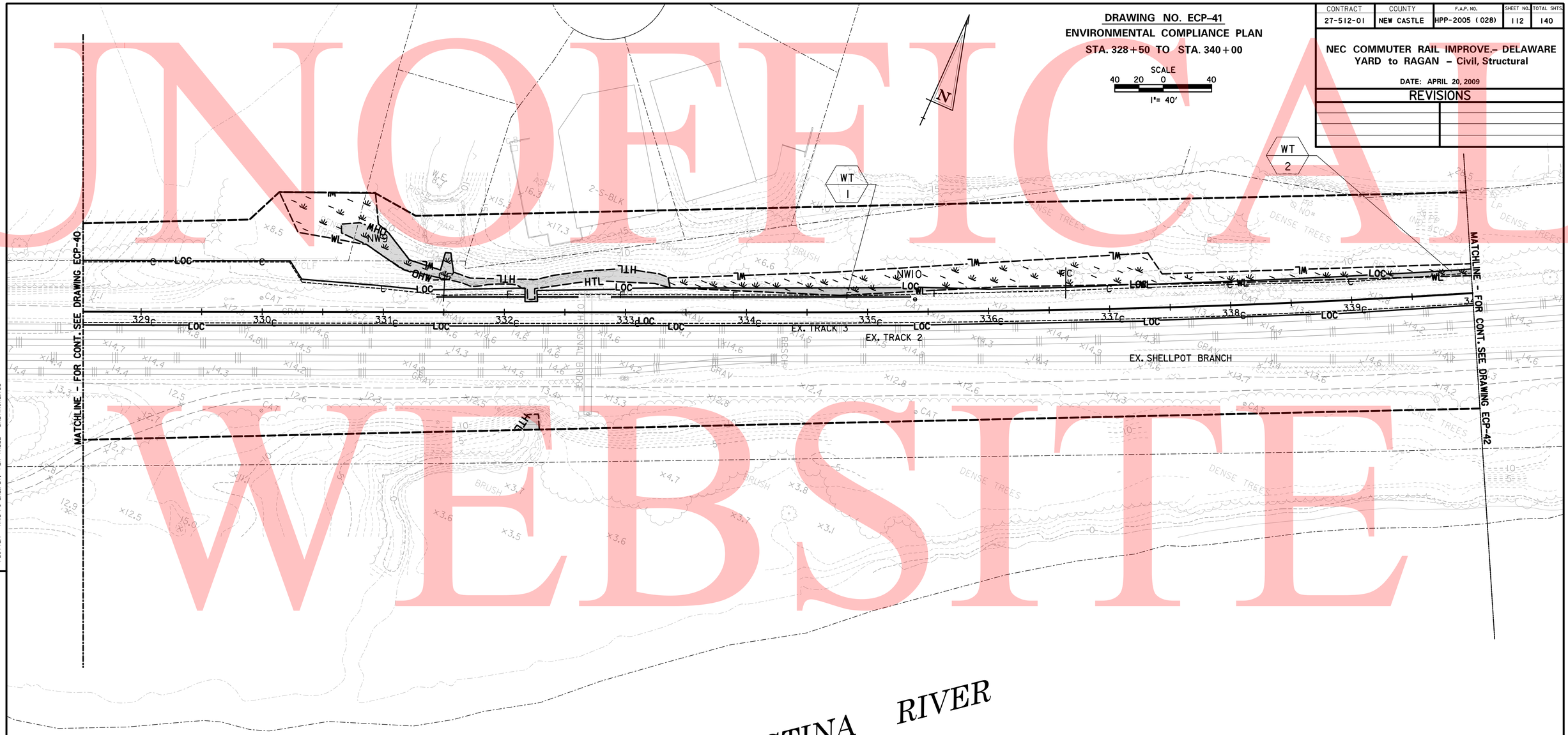
NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. ECP–41
ENVIRONMENTAL COMPLIANCE PLAN
STA. 328+50 TO STA. 340+00

SCALE
40 20 0 40
1"= 40'



WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
nw9-1	625851.904666	608409.859897
nw9-2	625858.926664	608407.306222
nw9-4	625866.214707	608420.623019
nw9-6	625868.250563	608446.679120
nw9-10	625857.824749	608497.193400
nw9-10a	625872.495201	608494.884360
nw9-10b	625874.060937	608498.808679
nw9-10c	625860.306271	608507.768019
nw10-2a	625928.3532	608671.3225
nw10-1a	625921.6245	608675.8500
nw9-9	625853.383729	608506.425674
nw9-8	625855.142134	608470.030469
nw9-7	625845.146029	608468.938302
nw9-5	625861.054609	608443.901612
nw9-3	625861.074857	608424.954316

WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
nw10-1a	625921.6245	608675.8500
nw10-2	625973.1033	608806.9858
nw10-3	626033.9814	608925.9255
nw10-4	626107.4556	609083.4512
nw10-5	626201.2737	609278.2867
nw10-6	626209.9924	609273.8308
nw10-7	626097.6380	609042.4998
nw10-8	626108.5754	609024.6444
nw10-1	625987.8683	608793.0446
nw10-2a	625928.3532	608671.3225

LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- WL — FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)
— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

4/21/2009
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PLOTTER = RAIL_PS-ENLRLL, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	113	140

DRAWING NO. ECP-42

ENVIRONMENTAL COMPLIANCE PLAN

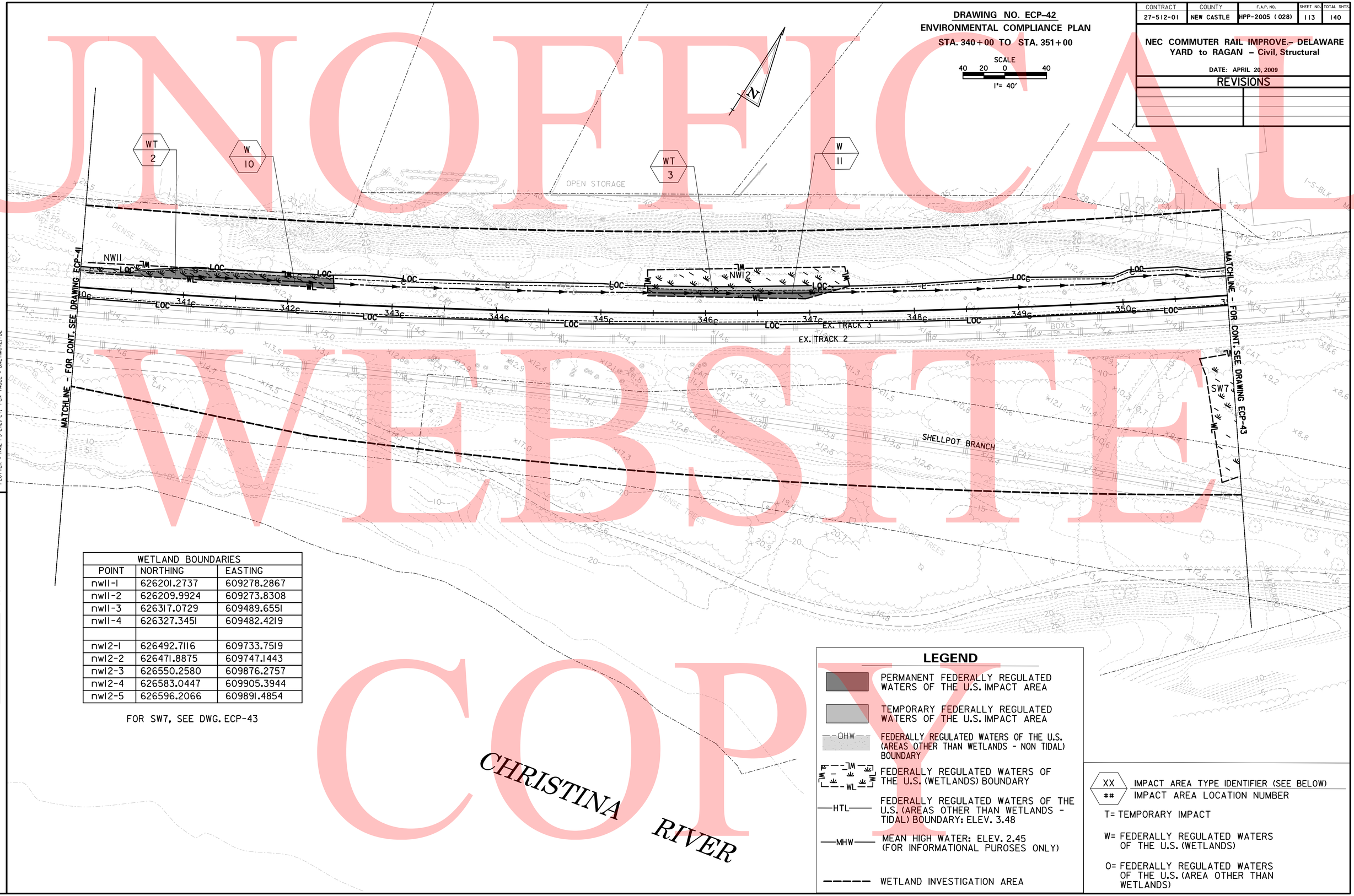
STA. 340+00 TO STA. 351+00

SCALE
40 20 0 40
1"= 40'

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
nw11-1	626201.2737	609278.2867
nw11-2	626209.9924	609273.8308
nw11-3	626317.0729	609489.6551
nw11-4	626327.3451	609482.4219
nw12-1	626492.7116	609733.7519
nw12-2	626471.8875	609747.1443
nw12-3	626550.2580	609876.2757
nw12-4	626583.0447	609905.3944
nw12-5	626596.2066	609891.4854

FOR SW7, SEE DWG. ECP-43

LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- TM / WL — FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)
— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	114	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. ECP-43

ENVIRONMENTAL COMPLIANCE PLAN

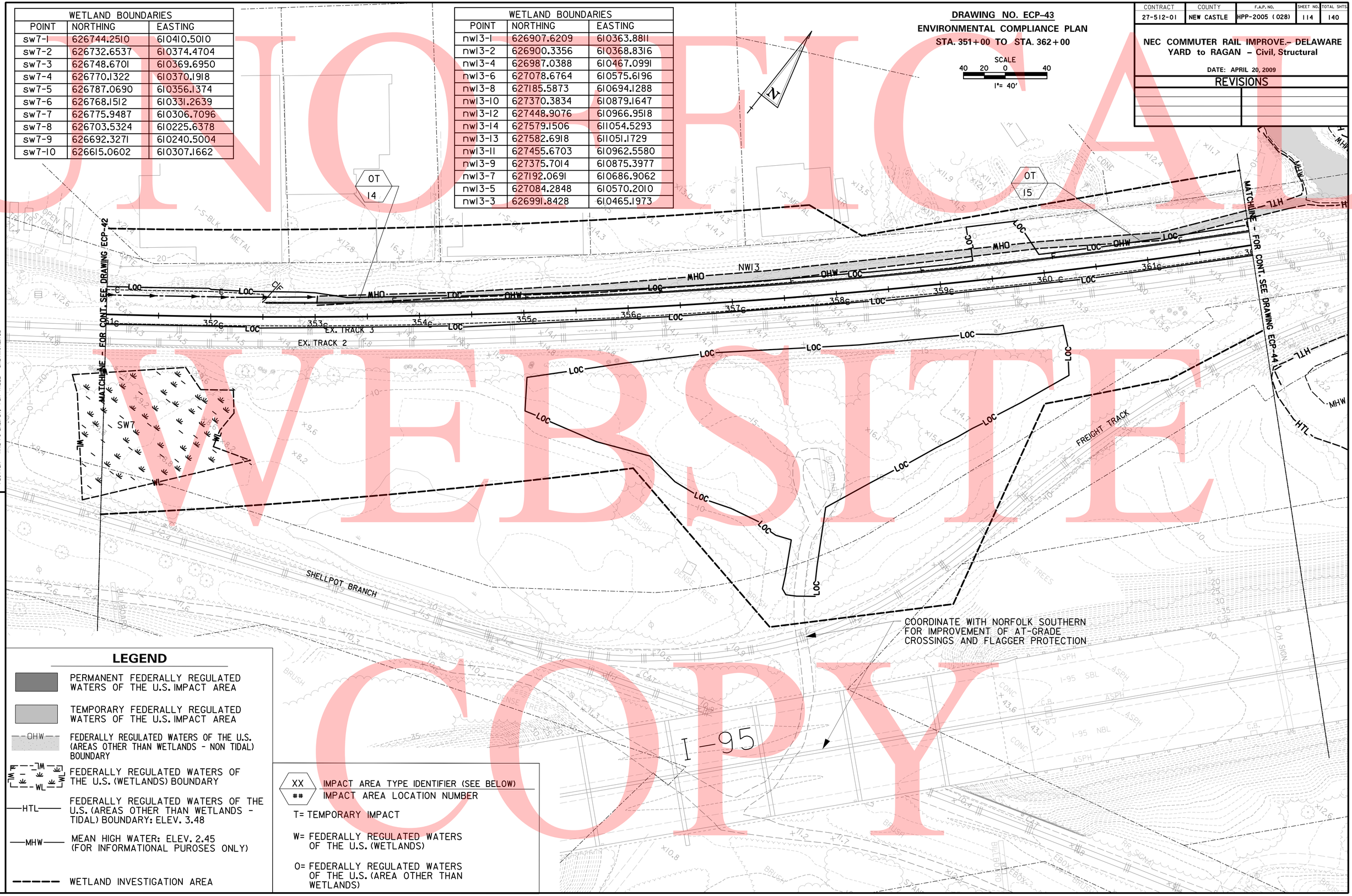
STA. 351+00 TO STA. 362+00

SCALE 40 20 0 40

1"= 40'

WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
sw7-1	626744.2510	610410.5010
sw7-2	626732.6537	610374.4704
sw7-3	626748.6701	610369.6950
sw7-4	626770.1322	610370.1918
sw7-5	626787.0690	610356.1374
sw7-6	626768.1512	610331.2639
sw7-7	626775.9487	610306.7096
sw7-8	626703.5324	610225.6378
sw7-9	626692.3271	610240.5004
sw7-10	626615.0602	610307.1662

WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
nw13-1	626907.6209	610363.8811
nw13-2	626900.3356	610368.8316
nw13-4	626987.0388	610467.0991
nw13-6	627078.6764	610575.6196
nw13-8	627185.5873	610694.1288
nw13-10	627370.3834	610879.1647
nw13-12	627448.9076	610966.9518
nw13-14	627579.1506	611054.5293
nw13-13	627582.6918	611051.1729
nw13-11	627455.6703	610962.5580
nw13-9	627375.7014	610875.3977
nw13-7	627192.0691	610686.9062
nw13-5	627084.2848	610570.2010
nw13-3	626991.8428	610465.1973



LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
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- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)

— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	115	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

NOTES:

1. INSTALL COAST GUARD WARNING DEVICES PER THE SPECIAL PROVISIONS.
2. INSTALL MIGRATORY BIRD NETTING PER SPECIAL PROVISIONS.

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)
— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
sw9-1	627651.410	611264.950
sw9-2	627604.650	611393.670
sw9-3	627563.640	611435.620
sw9-4	627648.020	611502.440
sw9-5	627709.700	611564.950
sw9-6	627727.920	611601.630
sw10-1	627757.470	611627.230
sw10-2	627790.380	611604.090
sw10-3	627818.730	611618.970
sw10-4	627880.250	611670.610
sw11-1	627521.560	611185.240
sw11-2	627549.940	611201.150
sw11-3	627592.570	611238.170
sw11-4	627617.890	611238.190

DRAWING NO. ECP-44

ENVIRONMENTAL COMPLIANCE PLAN

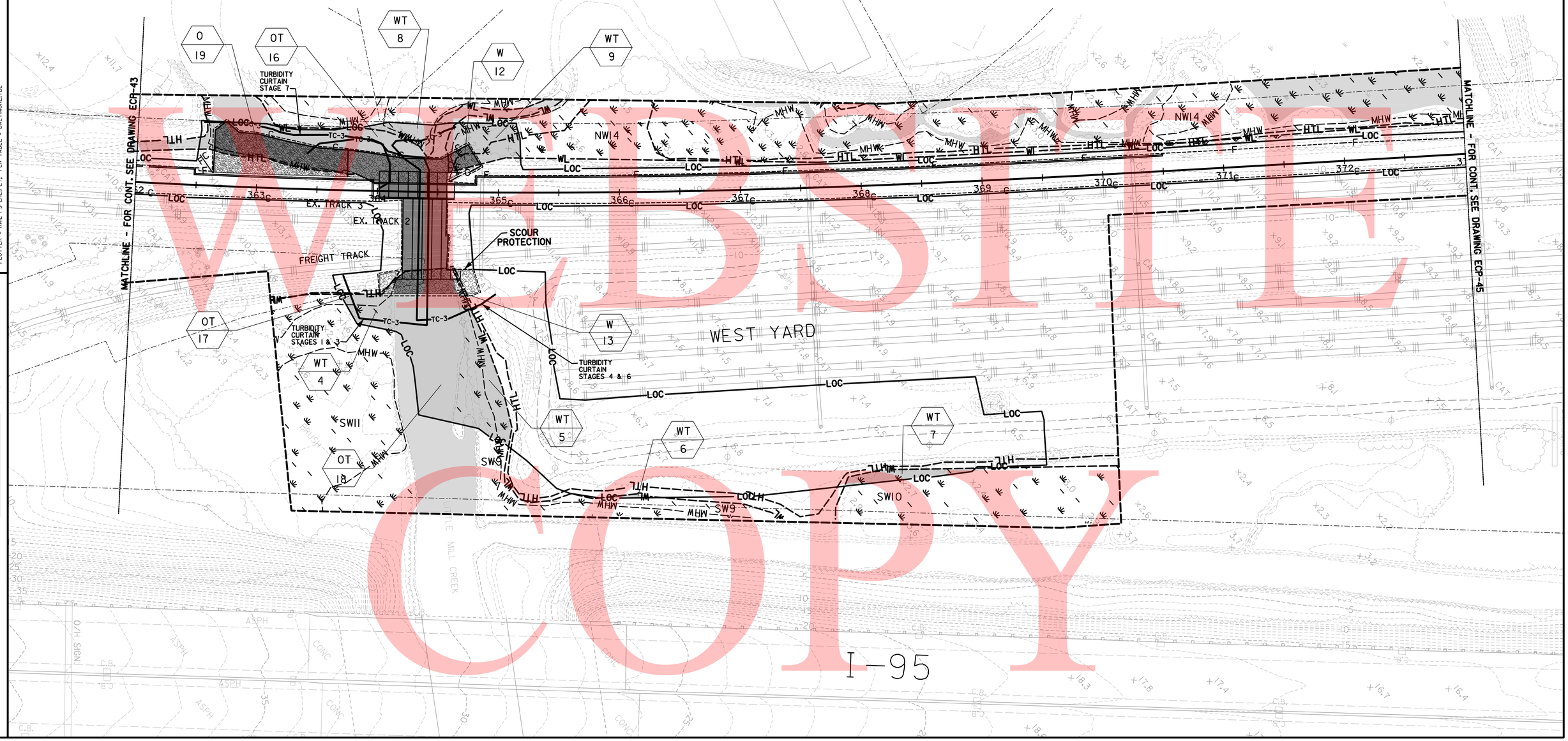
STA. 362+00 TO STA. 373+00

SCALE 40 20 0 40

1"= 40'

WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
nw14-1	627726.1367	611177.9855
nw14-2	627714.9249	611186.4626
nw14-3	627710.1939	611201.8362
nw14-4	627744.6033	611219.5305
nw14-5	627938.8096	611388.9088
nw14-6	628173.6780	611567.5490
nw14-7	628304.8538	611661.8212
nw14-8	628394.1180	611729.1848

FOR NW13, SEE DWG. ECP-43



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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	116	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

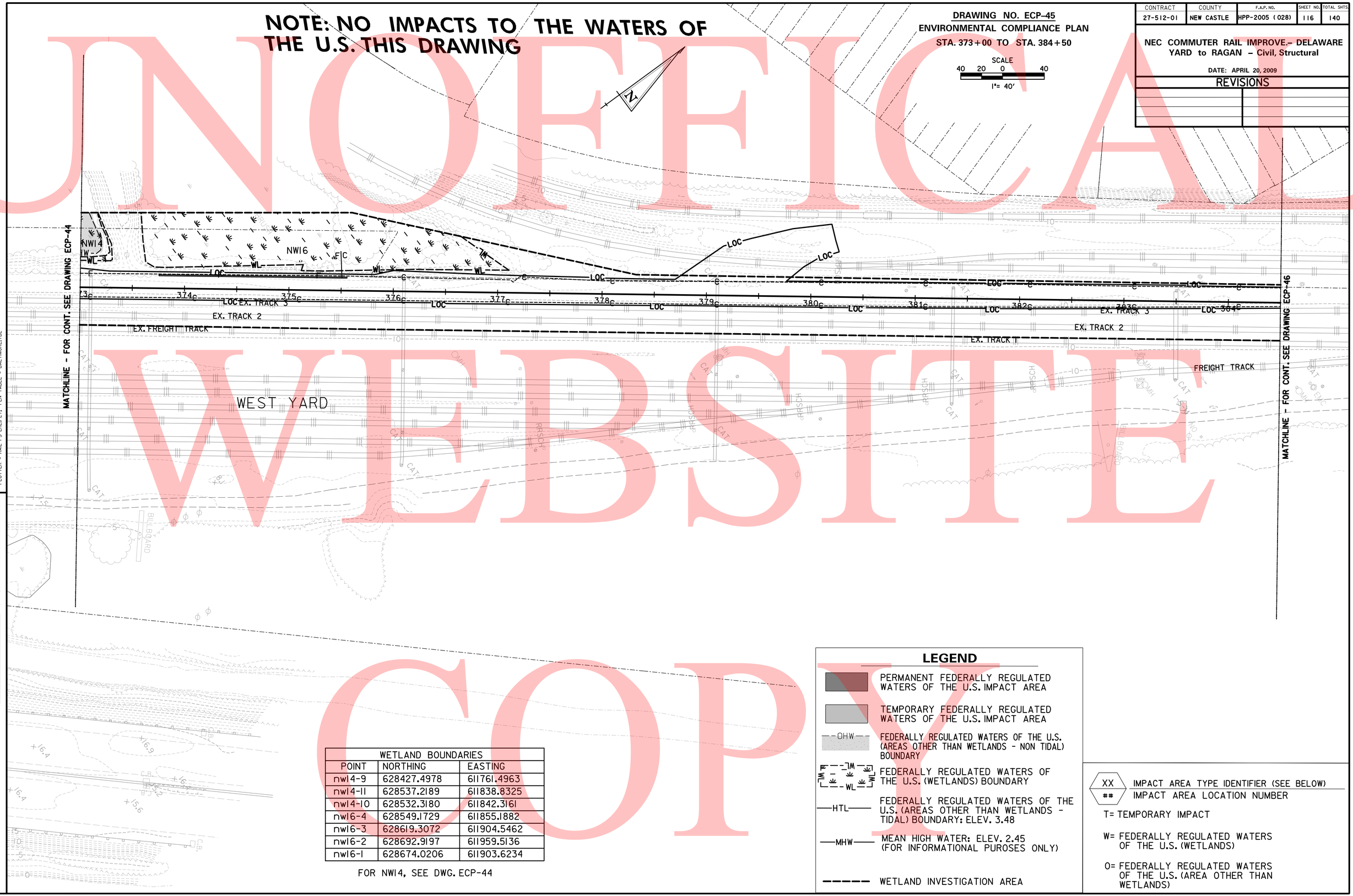
DATE: APRIL 20, 2009

REVISIONS

NOTE: NO IMPACTS TO THE WATERS OF THE U.S. THIS DRAWING

DRAWING NO. ECP-45
ENVIRONMENTAL COMPLIANCE PLAN
STA. 373+00 TO STA. 384+50

SCALE
40 20 0 40
1"= 40'



WETLAND BOUNDARIES		
POINT	NORTHING	EASTING
nw14-9	628427.4978	611761.4963
nw14-11	628537.2189	611838.8325
nw14-10	628532.3180	611842.3161
nw16-4	628549.1729	611855.1882
nw16-3	628619.3072	611904.5462
nw16-2	628692.9197	611959.5136
nw16-1	628674.0206	611903.6234

FOR NW14, SEE DWG. ECP-44

LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- WL — FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)
— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

UNOFFICIAL WEBSITE COPY

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	117	140

DRAWING NO. ECP-46
ENVIRONMENTAL COMPLIANCE PLAN
STA. 384+50 TO STA. 395+50

SCALE
40 20 0 40
1"= 40'

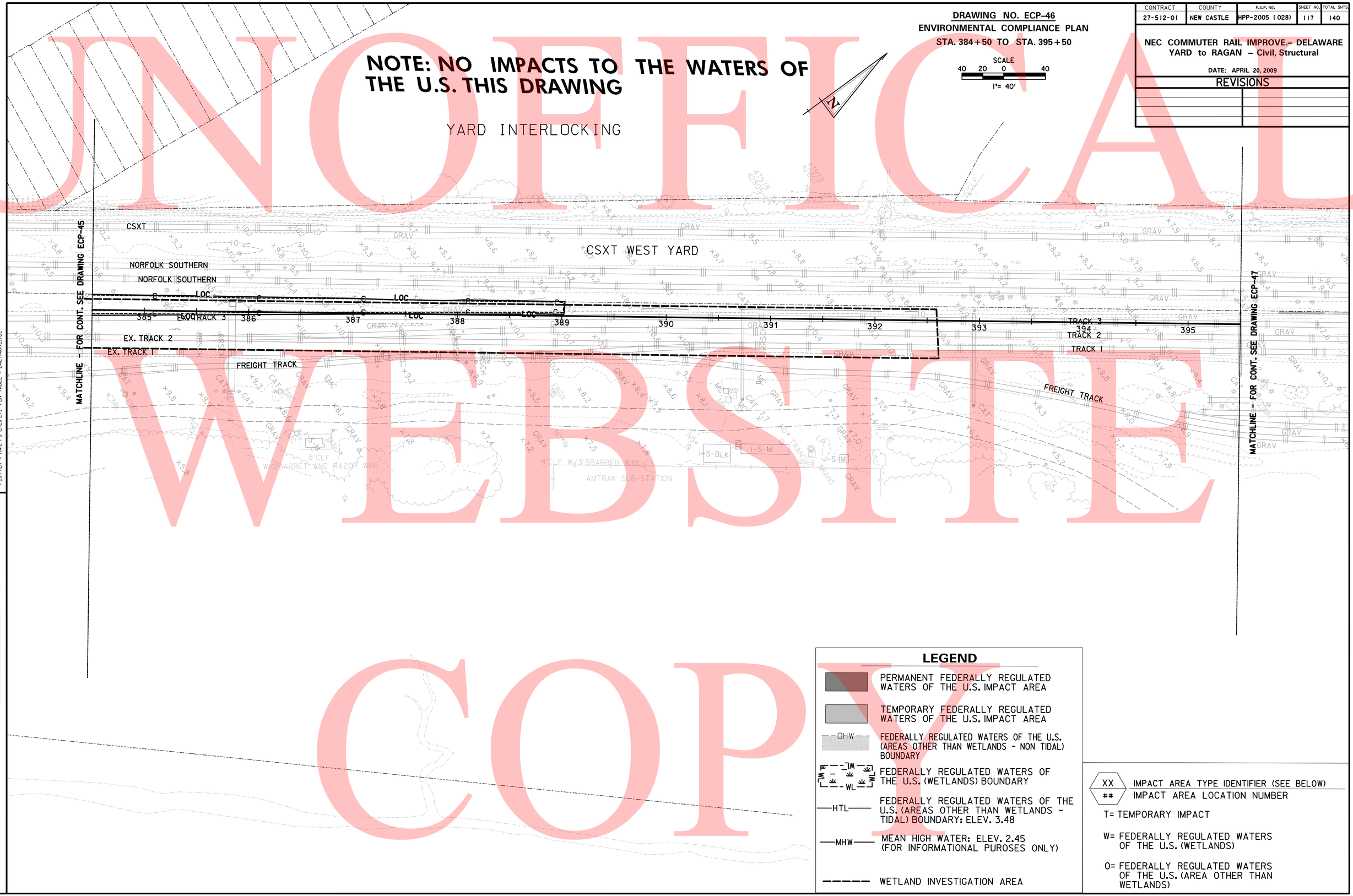
NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS

UNOFFICIAL WEBSITE COPY

NOTE: NO IMPACTS TO THE WATERS OF THE U.S. THIS DRAWING



LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- W — FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)
— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

4/21/2009
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PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	118	140

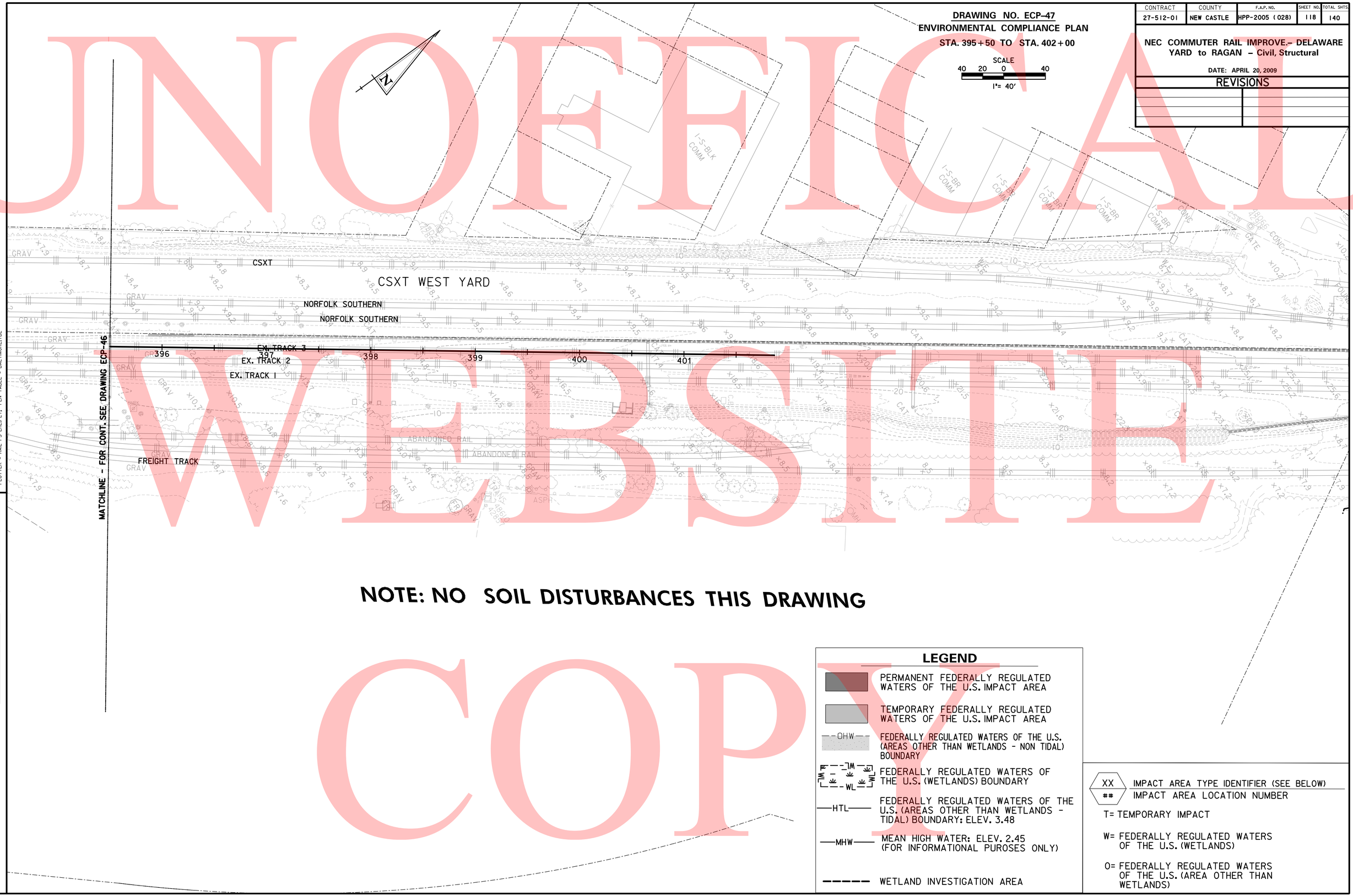
DRAWING NO. ECP-47
ENVIRONMENTAL COMPLIANCE PLAN
STA. 395+50 TO STA. 402+00

SCALE
40 20 0 40
1"= 40'

NEC COMMUTER RAIL IMPROVE.- DELAWARE YARD to RAGAN - Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



NOTE: NO SOIL DISTURBANCES THIS DRAWING

LEGEND

- PERMANENT FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- TEMPORARY FEDERALLY REGULATED WATERS OF THE U.S. IMPACT AREA
- OHW — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - NON TIDAL) BOUNDARY
- WL — FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS) BOUNDARY
- HTL — FEDERALLY REGULATED WATERS OF THE U.S. (AREAS OTHER THAN WETLANDS - TIDAL) BOUNDARY: ELEV. 3.48
- MHW — MEAN HIGH WATER: ELEV. 2.45 (FOR INFORMATIONAL PUROSES ONLY)
- WETLAND INVESTIGATION AREA

XX — IMPACT AREA TYPE IDENTIFIER (SEE BELOW)
— IMPACT AREA LOCATION NUMBER

T= TEMPORARY IMPACT

W= FEDERALLY REGULATED WATERS OF THE U.S. (WETLANDS)

O= FEDERALLY REGULATED WATERS OF THE U.S. (AREA OTHER THAN WETLANDS)

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FOR INFORMATION ONLY

DRAWING NO. FIO-1

EXISTING CATENARY STRUCTURE D-5

STA. 353+95 – THIRD TRACK

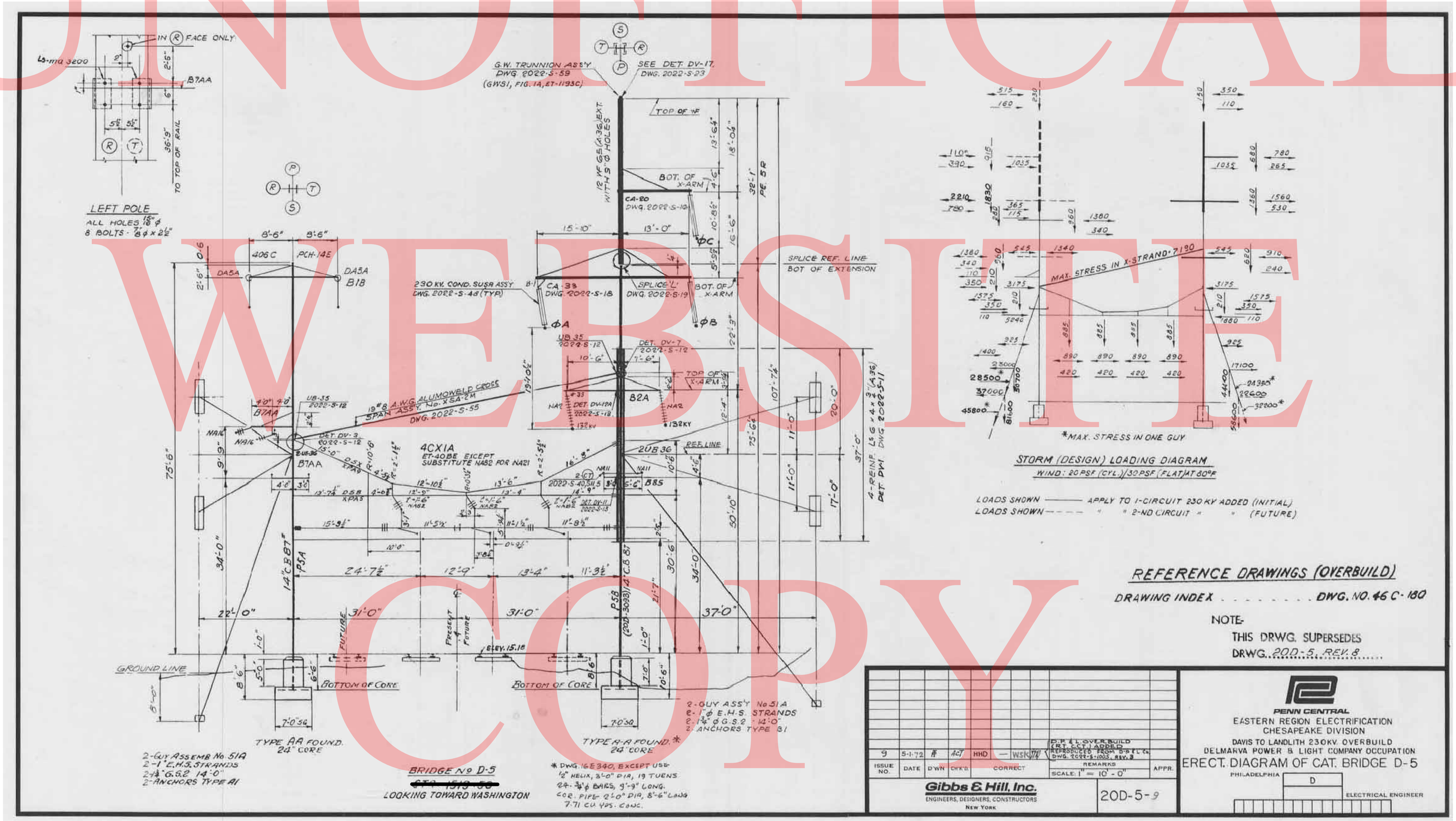
NOT TO SCALE

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	HPP-2005 (028)	135	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



REFERENCE DRAWINGS (OVERBUILD)

DRAWING INDEX . . . . . DWG. NO. 46 C-180

NOTE-

THIS DRWG. SUPERSEDES DRWG. 20D-5, REV. 8

ISSUE NO.	DATE	D'WN	CHK'D	CORRECT	REMARKS	APPR.
9	5-1-72		ACT	HHD	— WSK	D.P. & L. OVERBUILD (RT. CCT.) ADDED. REPRODUCED FROM D.P. & L. Co. DWG. 2022-S-1005, REV. 3

SCALE: 1" = 10'-0"

Gibbs & Hill, Inc.
ENGINEERS, DESIGNERS, CONSTRUCTORS
NEW YORK

20D-5-9

PENN CENTRAL
EASTERN REGION ELECTRIFICATION
CHESAPEAKE DIVISION
DAVIS TO LANDLITH 230KV. OVERBUILD
DELMARVA POWER & LIGHT COMPANY OCCUPATION
ERECT. DIAGRAM OF CAT. BRIDGE D-5
PHILADELPHIA
D
ELECTRICAL ENGINEER

$$DATE$$
$$FILE$$
PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING _____ DESIGN _____ CHKD. _____

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FOR INFORMATION ONLY

DRAWING NO. FIO-2

EXISTING CATENARY STRUCTURE D-4

STA. 356+78 – THIRD TRACK

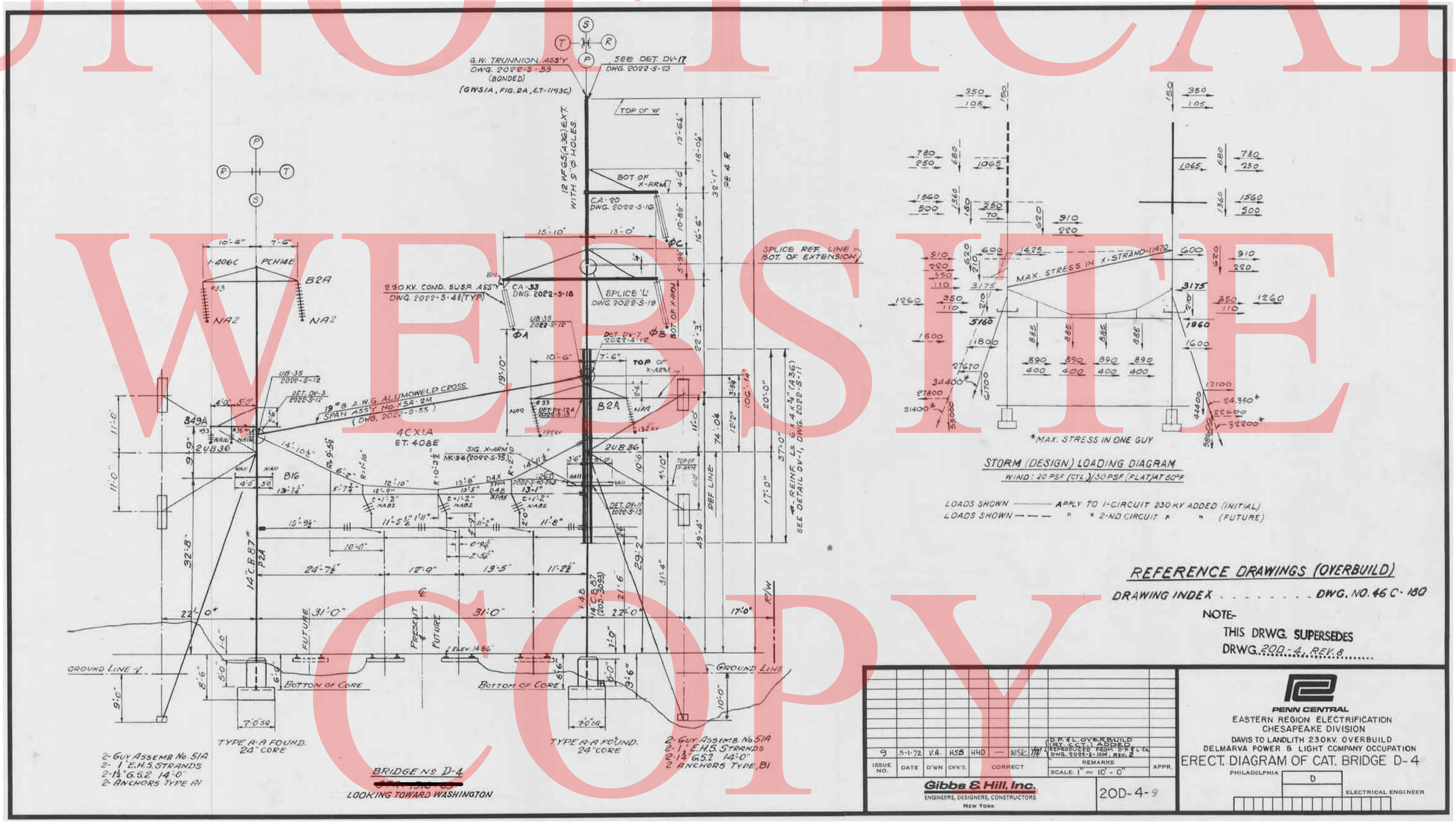
NOT TO SCALE

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	136	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



$$DATE$$
$$FILE$$
PLOTTER = RAIL-PS-CHL-PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING _____ DESIGN _____ CHKD. _____

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FOR INFORMATION ONLY

DRAWING NO. FIO-3

EXISTING CATENARY STRUCTURE D-3

STA. 359+47 – THIRD TRACK

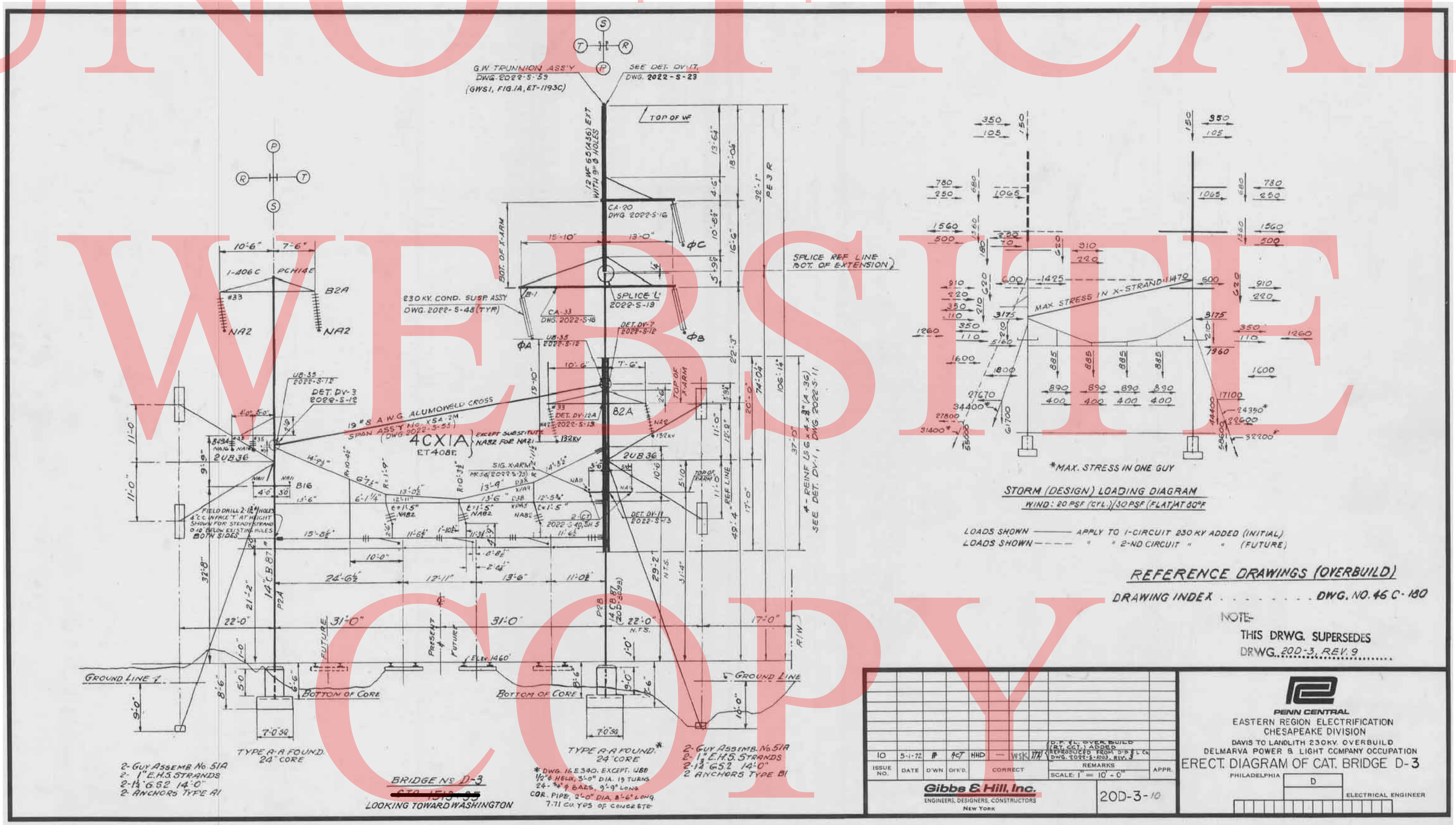
NOT TO SCALE

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	137	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



$$DATE$$
$$FILE$$
PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING ____ DESIGN ____ CHKD. ____

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FOR INFORMATION ONLY

DRAWING NO. FIO-4

EXISTING CATENARY STRUCTURE D-2

STA. 362+18 – THIRD TRACK

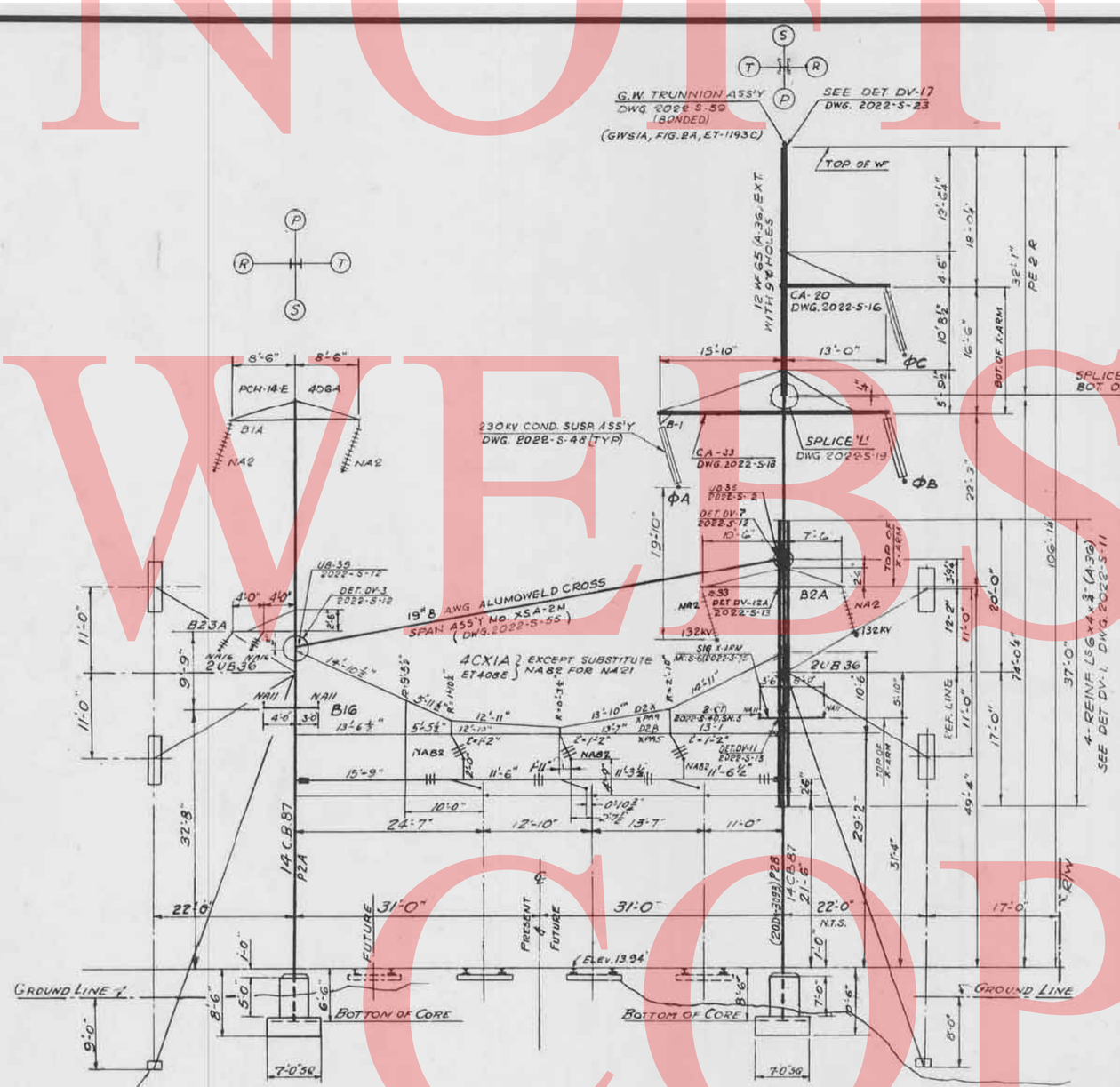
NOT TO SCALE

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	138	140

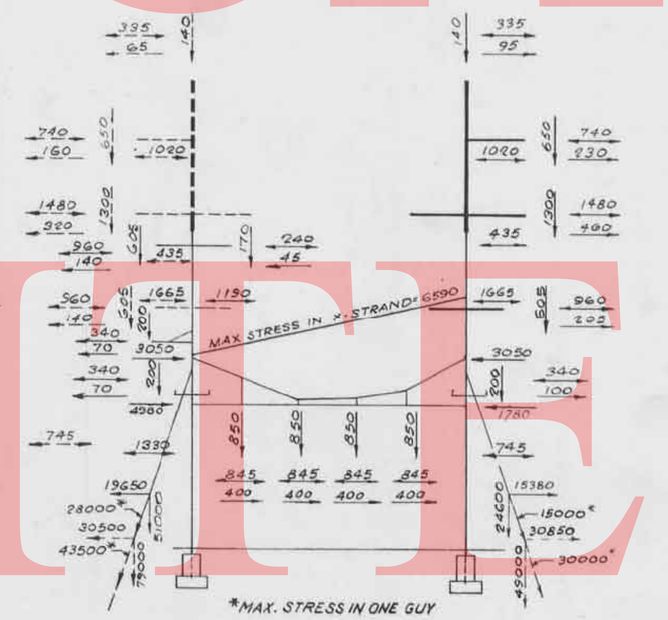
NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



BRIDGE No D-2
~~STA. 15H+25~~
LOOKING TOWARD WASHINGTON



STORM (DESIGN) LOADING DIAGRAM

WIND: 20 PSF (CYL.)/30 PSF (FLAT) AT 80°F

LOADS SHOWN ——— APPLY TO 1-CIRCUIT 230 KV ADDED (INITIAL)

LOADS SHOWN – – – – " " 2-ND CIRCUIT " " (FUTURE)

REFERENCE DRAWINGS (OVERBUILD)

DRAWING INDEX . . . . . DWG. NO. 46C-180

NOTE-

THIS DRWG. SUPERSEDES

DRWG. 20D-2, REV. 8

ISSUE NO.	DATE	D'WN	CH'K'D	CORRECT	REMARKS	APPR.
9	5-1-72	V.A.	HSB	HHD	D.P.&L. OVERBUILD (1ST. CCT.) ADDED. REPRODUCED FROM D.P.&L. Co. DWG. 2022-S-2022, REV. 3	

SCALE: 1" = 10'-0"

Gibbs & Hill, Inc.
ENGINEERS, DESIGNERS, CONSTRUCTORS
NEW YORK

20D-2-9

PENN CENTRAL
EASTERN REGION ELECTRIFICATION
CHESAPEAKE DIVISION
DAVIS TO LANDLITH 230KV. OVERBUILD
DELMARVA POWER & LIGHT COMPANY OCCUPATION
ERECT. DIAGRAM OF CAT. BRIDGE D-2

PHILADELPHIA | D | ELECTRICAL ENGINEER

$$DATE$$
$$FILE$$
PLOTTER = RAIL-PS-EHL-PLT, PEN TABLE = BALTIMORE.TBL

DESIGN _____ CHKD. _____

PREL. TRACING _____

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FOR INFORMATION ONLY

DRAWING NO. FIO–5

EXISTING CATENARY STRUCTURE D–1

STA. 364 + 87 – THIRD TRACK

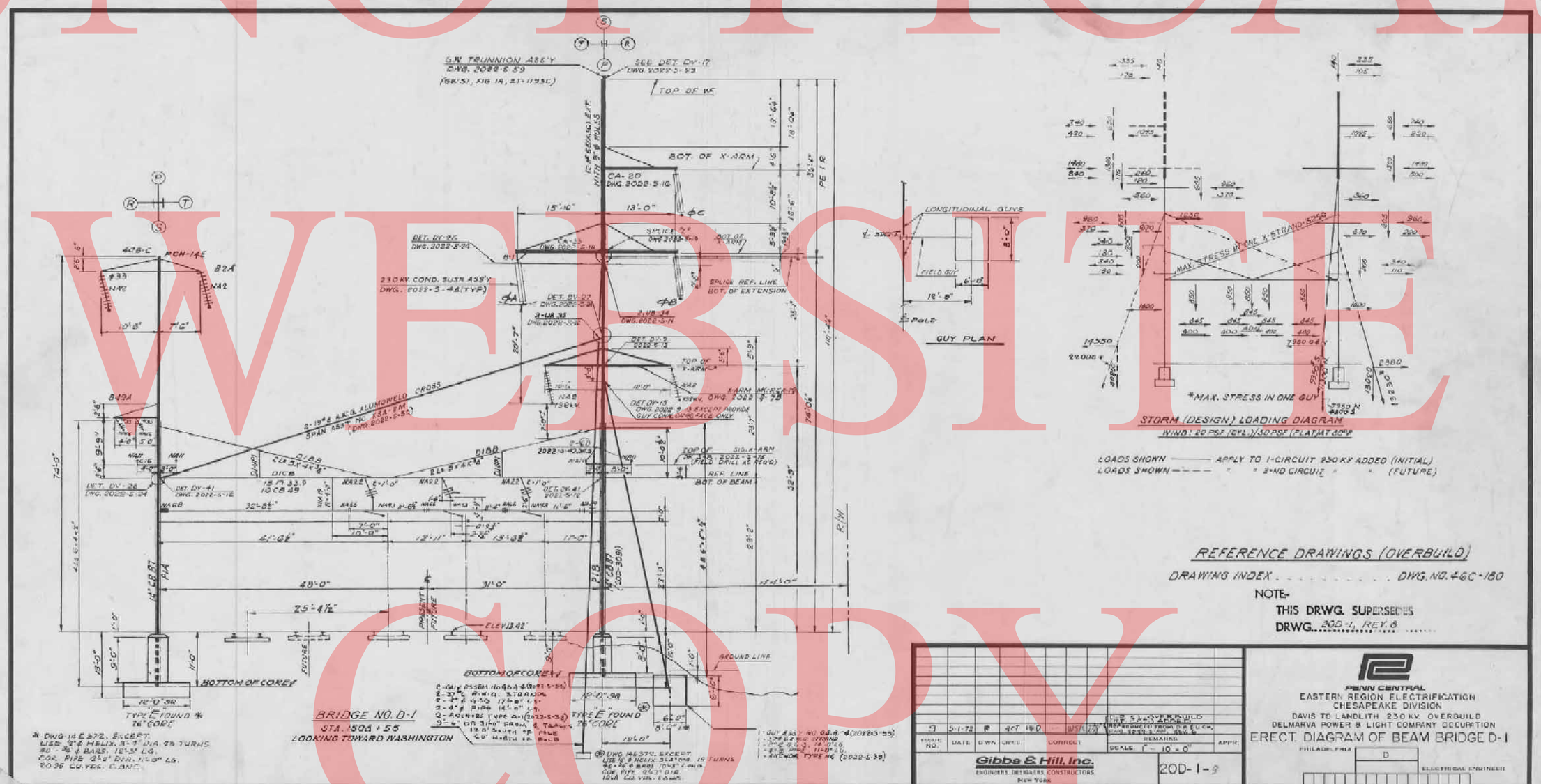
NOT TO SCALE

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	139	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



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FOR INFORMATION ONLY

DRAWING NO. FIO-6

EXISTING CATENARY STRUCTURE W-513

STA. 367+55 – THIRD TRACK

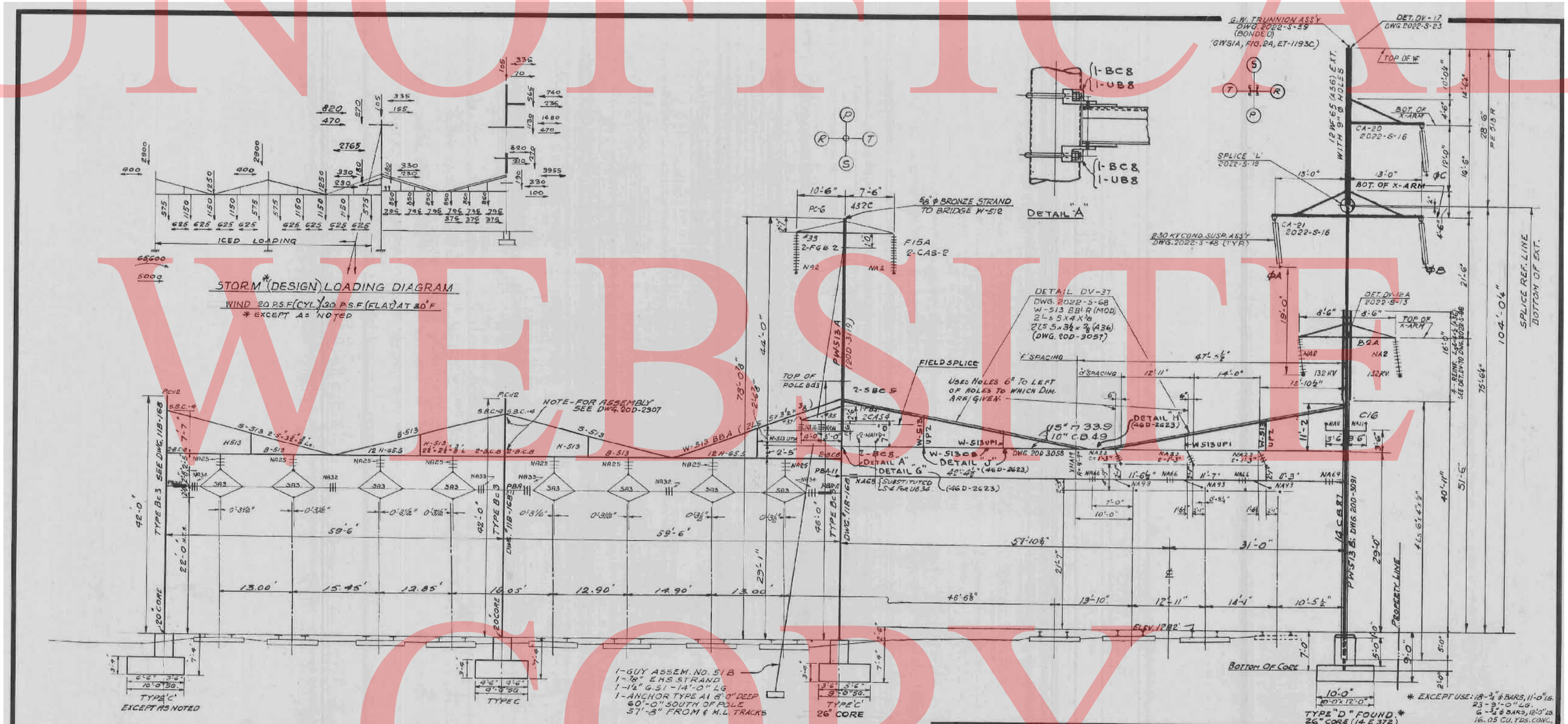
NOT TO SCALE

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	140	140

NEC COMMUTER RAIL IMPROVE.– DELAWARE YARD to RAGAN – Civil, Structural

DATE: APRIL 20, 2009

REVISIONS



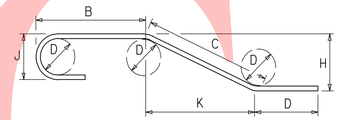
CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
27-512-01	NEW CASTLE	N/A	71A	140

NEC COMMUTER RAIL IMPROVEMENTS- DELAWARE YARD TO RAGAN - CIVIL, STRUCTURAL

DATE: APRIL 20, 2009

REVISIONS

DRAWING NO. HW-6A
REINFORCING BAR LIST
THIRD TRACK



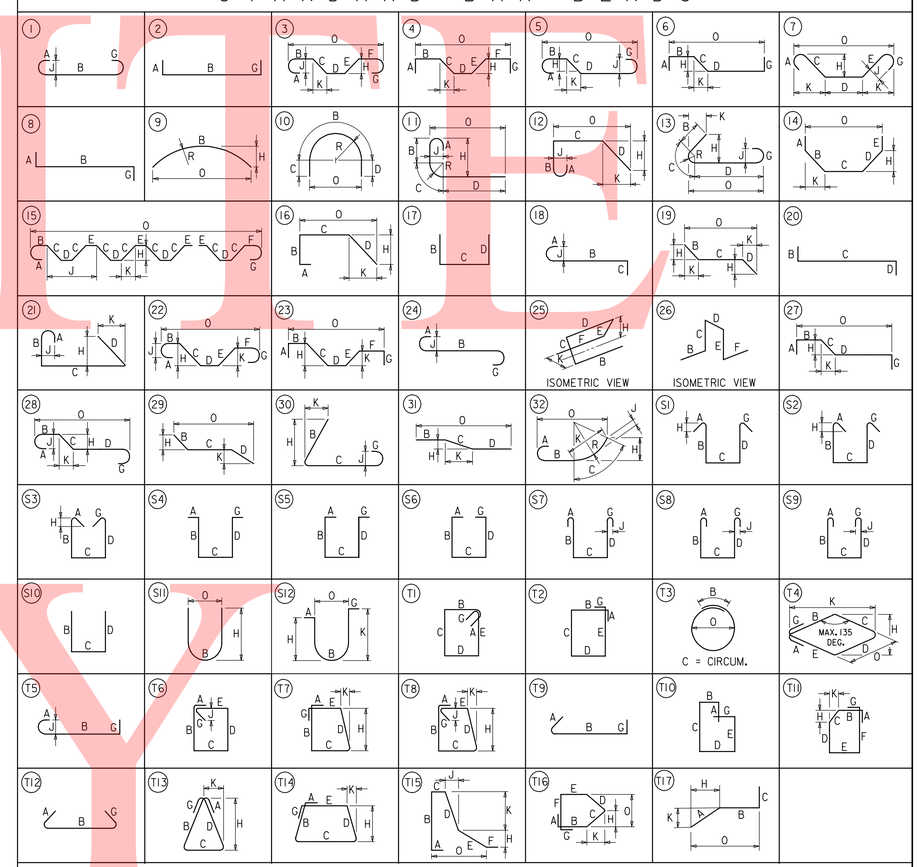
NOTES:

1. FIGURES SHOWN IN CIRCLES REPRESENT BAR BEND TYPES.
2. STANDARD BAR BENDS INCLUDE ONLY TYPES 1-32, S1-S12, AND T1-T16.
3. ALL DIMENSIONS ARE OUT-TO-OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180^ AND 135^ HOOKS.
4. "J" DIMENSIONS ON 180^ HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
5. WHERE "J" IS NOT SHOWN, "J" WILL BE KEPT EQUAL TO OR LESS THAN "H" ON TRUSS BARS. WHERE "J" CAN EXCEED "H", IT SHALL BE SHOWN.
6. "H" DIMENSIONS OF STIRRUPS TO BE SHOWN WHERE NECESSARY TO FIT WITHIN THE CONCRETE.
7. UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.
8. WHERE SLOPE DIFFERS FROM 45^ OFFSET, "H" AND "K" MUST BE SHOWN.
9. WHERE BARS ARE TO BE BENT MORE ACCURATELY THAN STANDARD BENDING TOLERANCES, BENDING DIMENSIONS WHICH REQUIRE CLOSER FABRICATION SHOULD HAVE LIMITS INDICATED.
10. FOR RECOMMENDED DIAMETER "D", OF BENDS, HOOKS, ETC., REFER TO TABLE AT RIGHT, 'CRSI' OR 'ACI' TABLES.
11. TYPE S1-S12, T1-T16 APPLY TO BAR SIZES 3 THROUGH 6.

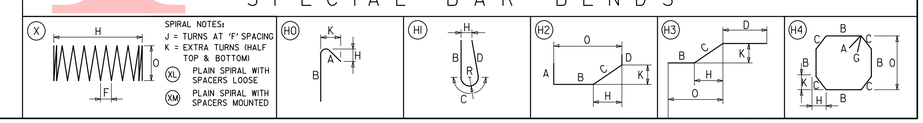
ASTM STANDARD ENGLISH REINFORCING BARS				RECOMMENDED END HOOKS, APPLICABLE TO ALL GRADES			
NOMINAL DIMENSIONS				180° HOOKS		90° HOOKS	
BAR SIZE	DIAMETER (inches)	AREA (inches)	WEIGHT (lbs. / ft.)	D	A OR G	J	A OR G
3	0.375	0.110	0.376	2⅜"	5"	3"	6"
4	0.500	0.200	0.668	3"	6"	4"	8"
5	0.625	0.310	1.043	3⅞"	7"	5"	10"
6	0.750	0.440	1.502	4½"	8"	6"	1'-0"
7	0.875	0.600	2.044	5⅛"	10"	7"	1'-2"
8	1.000	0.790	2.670	6"	11"	8"	1'-4"
9	1.128	1.000	3.400	9⅜"	1'-3"	11½"	1'-7"
10	1.270	1.270	4.303	10⅝"	1'-5"	1'-1½"	1'-10"
11	1.410	1.560	5.313	1'-0"	1'-7"	1'-2½"	2'-0"
14	1.693	2.250	7.650	1'-6½"	2'-3"	1'-9½"	2'-7"
18	2.257	4.000	13.600	2'-0"	3'-0"	2'-4½"	3'-5"

	SPECIFICATIONS					BENDING DIMENSIONS (FT-IN / QUARTER IN)											
	QTY.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	D
HEADWALL	20	5	4-3	W561	STR											
	20	5	VARIES 3-3 to 9-10	W562	STR											
	22	5	VARIES 4-3 to 11-2	W563	2	0-10	VARIES 3-5 to 10-4									
	22	5	VARIES 4-3 to 11-2	W564	2	0-10	VARIES 3-5 to 10-4									
	4	5	9-9	W565	16		5-11	0	3-10				3-6		1-6	
	4	5	9-4	W566	16		6-5	0	2-11				2-6		1-7	
	8	5	2-0	W567	STR											
	21	5	6-10	W568	S4	0-10	2-8	0-8	2-8							
	11	6	VARIES 4-2 to 11-4	W669	STR											
	21	6	VARIES 1-8 to 9-8	W670	STR											
	2	6	VARIES 22-3 to 23-9	W671	10		VARIES 10-3 to 11-9	6-0	6-0		VARIES 3-6 to 3-9					
	41	6	VARIES 1-8 TO 9-8	W672	STR											
	38	7	6-1	W761	2		5-0	1-1								
	38	7	VARIES 3-9 to 10-4	W762	STR											
	13	6	11-6	F661	STR											
	13	6	11-6	F662	STR											
	13	6	11-6	F663	STR											
	6	6	11-6	F664	STR											
	9	6	11-6	F665	STR											
	6	6	5-3	F666	2	1-0	4-3									
	6	6	4-10	F667	STR											
	11	6	VARIES 4-2 to 11-8	F668	STR											
	25	9	11-6	F961	STR											
RETAINING WALL																
	6374	4	1-8	EW461	STR											
	2790	5	VARIES 2-5 TO 5-6	EW561	STR											
	5750	5	3-1	EW562	16	1-9	0-5	0-3	0-8				0-5		0-5	
	105	6	VARIES 6-0 TO 8-0	EW661	STR											

STANDARD BAR BENDS



SPECIAL BAR BENDS



$$DATE$$
$$FILE$$
PLOTTER = RAIL-PS-EHL.PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING _____ DESIGN _____ CHKD. _____

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