



STATE OF DELAWARE  
DEPARTMENT OF TRANSPORTATION  
PO BOX 778  
DOVER, DELAWARE 19903

JACK MARKELL  
GOVERNOR

SHAILEN BHATT  
SECRETARY

**VIA WEBSITE DELIVERY**

(302) 760-2030  
FAX (302) 739-2254

October 21, 2011

Contract No. T200751201.01  
Federal Aid Project No. HPP-2005(028)  
NORTHEAST CORRIDOR IMPROVEMENTS, YARD TO RAGAN - CIVIL, STRU  
New Castle County

Ladies and Gentlemen:

Enclosed is Addendum No. 2 for the referenced contract consisting of the following:

**NOTE: The date for the receipt of bids has been moved to Tuesday, November 1, 2011.**

1. One (1) page, Bid Proposal Cover, revised, to be substituted for the same page in the Proposal.
2. Three (3) sheets, Construction Plans, sheets 3, 39, and 73, revised, to be substituted for the same sheets in the Plan Set and one (1) sheet, Construction Plans, sheet 71A, new, to be added to the Plan Set.

Please note the revisions listed above and submit your bid based upon this information.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott S. Gottfried", written in a cursive style.

Scott S. Gottfried  
Competitively Bid Contracts Coordinator  
:ssg  
Enclosures

STATE OF DELAWARE



DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T200751201.01

**NORTHEAST CORRIDOR IMPROVEMENTS,  
YARD TO RAGAN - CIVIL, STRUCTURE**

**WILMINGTON TO NEWARK COMMUTER RAIL IMPROVEMENTS**

Advertisement date: August 18, 2011

FTA No. DE-03-0016, DE-05- 0014, FHWA No. HPP-2005(028)  
CFDA NO. 20.500

Prospective Bidders Are Advised That There Will Be a **Mandatory Pre-bid Meeting** and Site Visit for this Contract on August 31, 2011 at 10:30 A.m. in the Delaware Transit Corporation, Beech Street Offices, 119 Lower Beech Street, Suite 100, Wilmington, De 19805.

*Included in the Pre-bid Meeting Will Be a Civil Right Component Intended to Assist Planholders in Identifying and Engaging Certified DBE Firms to Meet the Established DBE Goal of 14%.*

Everyone Attending the Site Visit Will Need to Bring Their Own Safety Glasses, Work Boots, and an Orange Reflective Vest. We Do Not Supply Safety Gear. Photographs Will Be Allowed. Amtrak Will Supply RWP Protection During the Visit.

Completion Date 391 Working Days (available days)

SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION  
DELAWARE DEPARTMENT OF TRANSPORTATION  
AUGUST 2001

Bids will be received in the Bidder's Room, Transportation Administration Center, 800 Bay Road, Dover, Delaware until 2:00 P.M. local time November 1, 2011

10/15/2011  
\\BKMVA2007\2007\07092-DTC\Thir-d-TFK-CADD\Plans\001DTC.cddr-2.dgn  
PLOTTER = RAIL-PS-EHL-PLT, PEN TABLE = BALTIMORE.TBL

CHKD.

DESIGN

PREL. TRACING

1. THE LOCATIONS OF THE EXISTING UTILITIES SHOWN ARE APPROXIMATE, AND SHOULD BE CONSIDERED LOCATED TO QUALITY LEVEL "D". THE CONTRACTOR SHALL COORDINATE WITH AMTRAK FOR MARKINGS AND SHALL NOTIFY "MISS UTILITY" AT TELEPHONE NUMBER 1-800-282-8555 PRIOR TO ANY EXCAVATION OR BELOW GRADE INSTALLATION/RELOCATION. ALL EXISTING UTILITIES SHALL BE PROTECTED, TEMPORARILY SUPPORTED AND/OR RELOCATED AS NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY. COSTS SHALL BE INCIDENTAL TO THE ITEM OF WORK BEING COMPLETED.
2. THE ENGINEER MAY REQUIRE THE CONTRACTOR TO EXCAVATE TEST PITS AT POINTS OF POSSIBLE UTILITY CONFLICTS, TO DETERMINE IF A CONFLICT EXISTS. ANY CONFLICTS SHALL BE COORDINATED BY THE CONTRACTOR, WITH THE ENGINEER AND THE UTILITY COMPANY INVOLVED. THE ENGINEER SHALL ULTIMATELY DETERMINE THE SOLUTION TO THE UTILITY CONFLICT. TEST HOLES SHALL BE MEASURED AND PAID FOR IN ACCORDANCE WITH ITEM 208000, BUT ONLY TO THE ACTUAL DEPTH EXCAVATED.
3. EXISTING PROPERTY MONUMENTS THAT ARE DISTURBED OR DESTROYED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW MONUMENTS OF COMPARABLE MATERIAL AND SIZE TO THE ORIGINAL AND MEETING THE CURRENT STANDARDS FOR MONUMENTATION. ALL MONUMENTS THAT ARE PLACED SHALL BE LOCATED AND SET BY, OR UNDER THE SUPERVISION OF, A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR LICENSED TO PRACTICE IN THE STATE OF DELAWARE.
4. ALL PLAN DIMENSIONS ARE MEASURED TO THE CENTERLINE OF TRACK WHERE APPLICABLE, UNLESS OTHERWISE NOTED.
5. ALL LOADED TRUCKS HAULING TO OR FROM THE PROJECT SITE SHALL HAVE AN APPROVED COVER. THE COVER SHALL BE TIED ON THE REAR AND BOTH SIDES AND ENCLOSE THE TOP TO PREVENT MATERIAL FROM LEAVING THE TRUCK WHILE IN TRANSIT. THE COST TO COVER THE TRUCKS SHALL BE INCIDENTAL TO THE TRANSPORTED ITEM.
6. POOR SUBGRADE SOILS THAT ARE ENCOUNTERED AND DETERMINED BY THE ENGINEER TO REQUIRE UNDERCUT EXCAVATION SHALL BE EXCAVATED TO THE DEPTH DETERMINED BY THE ENGINEER AND SHALL BE PAID UNDER ITEM 212000, UNDERCUT EXCAVATION. BORROW TYPE B (209002) SHALL BE USED FOR UNDERCUT BACKFILL IN WET AREAS. ALL OTHER UNDERCUT BACKFILL AREAS SHALL BE BACKFILLED WITH BORROW TYPE F (209006) UNLESS OTHERWISE DIRECTED BY THE ENGINEER. GEOTEXTILE SEPARATION (713002) SHALL BE INSTALLED PRIOR TO BACKFILLING, AS DIRECTED BY THE ENGINEER.
7. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN AREA SUITABLE FOR STOCKPILING BORROW, TOPSOIL AND OTHER FILL MATERIAL REQUIRED FOR THE PROJECT IN ACCORDANCE WITH SECTIONS 110.07 AND 110.10 OF THE STANDARD SPECIFICATIONS. SUBJECT TO THE APPROVAL OF THE ENGINEER, STOCKPILE AREA MAY BE LOCATED OUTSIDE THE PROJECT LIMITS, IF NECESSARY. NO ADDITIONAL PAYMENT WILL OCCUR FOR OFFSITE STOCKPILING.
8. DURING CUT AND FILL OPERATIONS, SUFFICIENT SLOPE CONTROL STAKES MUST BE PROVIDED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER IN ORDER TO ASSURE THAT THE DESIGNED RATES OF SLOPE ARE BEING MAINTAINED. ADDITIONALLY, A LINE OF STAKES WILL BE REQUIRED AT ALL "HINGE POINTS", BREAKS IN SUBGRADE, BREAKS IN FINAL GRADE, AND AT OTHER LOCATIONS DEEMED NECESSARY BY THE ENGINEER. THIS WORK SHALL BE INCLUDED IN ITEM 763501-CONSTRUCTION ENGINEERING.
9. ANY DAMAGE TO ITEMS NOTED TO BE RELOCATED OR RESET BY THE CONTRACTOR, AT THE DISCRETION OF THE ENGINEER, SHALL BE REPAIRED AND/OR REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.
10. ALL TREES, STUMPS AND ROOTMAT REMOVED UNDER 201000 SHALL BE ENTIRELY REMOVED REGARDLESS OF DEPTH. BURIAL OF ORGANIC MATTER WITHIN THE PROJECT LIMITS IS NOT PERMITTED. OPEN BURNING OF TREES, STUMPS, BRUSH, ETC. IS NOT PERMITTED. CHIPPED MATERIAL MUST BE REMOVED PRIOR TO PLACING EMBANKMENT OR TOPSOIL.
11. CONSTRUCTION OF ANY PROPOSED DRAINAGE, TEMPORARY DRAINAGE, OR INSTALLATION OF EROSION CONTROL MEASURES SHALL START AT THE OUTFALL AND PROGRESS UPSTREAM FOR ALL CONSTRUCTION PHASES.
12. ALL PROPOSED DRAINAGE STRUCTURES TO CONNECT TO EXISTING PIPES, OR CONSTRUCTED ON EXISTING PIPES, MUST BE CAST-IN-PLACE CONCRETE. ALL OTHER DRAINAGE INLETS AND MANHOLES SHALL BE PRECAST OR CAST-IN-PLACE CONCRETE. THE CONTRACTOR IS ADVISED THAT INVERT OR ALIGNMENT ADJUSTMENTS, OR DRAINAGE INLET ELIMINATION, MAY BE REQUIRED IN THE FIELD TO AVOID EXISTING, UNANTICIPATED, UNDERGROUND CONFLICTS. SHOULD THE CONTRACTOR ELECT TO PRECAST THE DRAINAGE STRUCTURES, ANY DRAINAGE INLET ELIMINATIONS OR FIELD ADJUSTMENTS THAT WOULD REQUIRE MODIFICATION OR RE-CASTING OF PRECAST UNITS SHALL BE THE COMPLETE RESPONSIBILITY OF THE CONTRACTOR. THE DEPARTMENT WILL NOT CONSIDER ANY RENEGOTIATIONS OF DRAINAGE INLET BID PRICES. THE CONTRACTOR MUST WEIGH THIS WHEN CONSIDERING HIS OPTION TO PRECAST OR CAST-IN-PLACE. IN ALL CASES WHEN USING PRECAST UNITS, IT IS UNDERSTOOD THAT THE UNIT BID PRICE INCLUDES A MINIMUM CLEARANCE OF 2" ON ALL SIDES FROM THE OUTSIDE WALL OF ANY PIPE ENTERING OR EXITING THE UNIT TO THE INSIDE WALL OF THE PRECAST INLET OR MANHOLE WHICH WILL REQUIRE MODIFICATIONS TO THE CURRENT INLET AND MANHOLE DESIGN. THESE DESIGN MODIFICATIONS SHALL BE CLEARLY IDENTIFIED ON ALL PRECAST SHOP DRAWINGS.
13. ALL EXISTING DRAINAGE SYSTEMS SHOWN WITHIN THE RIGHT-OF-WAY ARE TO REMAIN OPERATIONAL.
14. ALL COSTS ASSOCIATED WITH CONNECTING PROPOSED STORM DRAINAGE PIPES TO EXISTING DRAINAGE INLETS OR EXISTING PIPES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PIPE BEING INSTALLED.
15. THE STATION AND OFFSET OF ALL DRAINAGE STRUCTURES ARE MEASURED TO THE CENTER OF THE STRUCTURE.

16. WHERE ADJUSTMENTS ARE REQUIRED TO NEW DRAINAGE STRUCTURES I.E. DRAINAGE INLETS, MANHOLES, JUNCTION BOXES, ETC., FOR STAGED CONSTRUCTION, THE ADJUSTED TOPS SHALL BE CAST-IN-PLACE CONCRETE. ELEVATION ADJUSTMENTS SHALL NOT EXCEED 1'. THIS NOTE SHALL SUPERSEDE ANY REFERENCE TO STANDARD CONSTRUCTION METHODS AS REFERRED TO ON THE STANDARD CONSTRUCTION DETAIL SHEETS. CONTRACTOR SHALL SUBMIT DETAILED PLANS SHOWING SECTIONS, JOINTS, REINFORCEMENT AND OTHER PERTINENT INFORMATION FOR APPROVAL. COST SHALL BE INCIDENTAL TO THE RESPECTIVE DRAINAGE STRUCTURE.
17. DELDOT WILL BE RESPONSIBLE FOR OBTAINING THE FOLLOWING PERMITS:
  - ACOE INDIVIDUAL PERMIT
  - DNREC SUBAQUEOUS LANDS PERMIT
  - DNREC WETLANDS PERMIT
  - DNREC WATER QUALITY CERTIFICATION
  - NEW CASTLE COUNTY FLOODPLAIN DEVELOPMENT APPROVAL
  - NEW CASTLE COUNTY NOISE ORDINANCE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL OTHER PERMITS REQUIRED, FOR PURPOSES OF CONSTRUCTION FOR THE PROJECT. ANY CHANGES TO THE PERMITS REQUIRED BY THE CONTRACTOR SHALL BE OBTAINED BY THE CONTRACTOR. DIFFICULTIES IN OBTAINING THE PERMITS OR CHANGES TO PERMITS WILL NOT JUSTIFY A DELAY IN THE CONSTRUCTION SCHEDULE OR INCREASE IN COST.
18. THE LUMP SUM BID FOR ITEM 763000, INITIAL EXPENSE, SHALL INCLUDE ALL COSTS ASSOCIATED WITH ANY CONSTRUCTION ENTRANCES INCLUDING CLEARING AND GRUBBING, OBTAINING RAILROAD RIGHT - OF ENTRY AGREEMENTS, CONSTRUCTING THE ENTRANCE SECURING THE ENTRANCE, MAINTAINING THE ENTRANCE, REMOVING THE ENTRANCE AND RESTORING THE AREA ONCE THE ENTRANCE IS REMOVED.
19. CLEARANCES:
  - A. THE CONTRACTOR SHALL NOTE VERTICAL AND HORIZONTAL CLEARANCE RESTRICTIONS AS SHOWN ON THE PLANS OR DESCRIBED IN THE SPECIAL PROVISIONS.
  - B. THE CONTRACTOR SHALL COORDINATE WITH AMTRAK AND RECEIVE WRITTEN APPROVAL FOR ALL ACTIVITIES WITHIN 25 FEET OF TRACKS OR ELECTRICAL WIRES.
  - C. ALL WIRES SHALL BE CONSIDERED ENERGIZED UNLESS SPECIFICALLY NOTIFIED OTHERWISE BY AMTRAK AND APPROPRIATE GROUNDING APPARATUS IS IN-PLACE.
  - D. THE CONTRACTOR SHALL COORDINATE WITH NORFOLK SOUTHERN AND/OR CSXT FOR ACTIVITIES WITHIN 25 FEET OF FREIGHT TRACKS.
20. THE CONTRACTOR SHALL COORDINATE WITH AMTRAK ET REGARDING REQUIRED PROTECTION MEASURES WHEN WORKING NEAR DOWN GUYS AND CATENARY POLES.

### ENVIRONMENTAL RESTRICTIONS

1. NO WORK SHALL OCCUR IN THE LITTLE MILL CREEK FROM ~~APRIL 1 THROUGH MAY 30~~ MARCH 15 TO MAY 31.
2. ALL CONSTRUCTION ACTIVITIES SHALL OCCUR WITHIN THE L.O.C. AS DESIGNATED ON THE PLAN SHEETS. ANY DEVIATION FROM THIS L.O.C. BY THE CONTRACTOR SHALL REQUIRE APPROVAL OBTAINED BY THE CONTRACTOR FROM A.C.O.E, DNREC, AND SHPO.

EARTHWORK SUMMARY	
<b>EXCAVATION</b>	
EXCAVATION FROM CROSS SECTIONS .....	6078 C.Y.
ROCK EXCAVATION FOR ROADWAY AND TRENCHES .....	0 C.Y.
TOPSOIL STRIPPING .....	420 C.Y.
<b>EXCAVATION AVAILABLE FOR EMBANKMENT</b>	
EXCAVATION MEETING BORROW TYPE 'A' .....	0 C.Y.
EXCAVATION MEETING BORROW TYPE 'F' .....	5633 C.Y.
EXCAVATION MEETING TOPSOIL .....	0 C.Y.
<b>EMBANKMENT REQUIREMENTS</b>	
BORROW TYPE 'A' REQUIRED .....	0 C.Y.
BORROW TYPE 'F' REQUIRED (INCLUDING UNDERCUT) .....	25 C.Y.
TOPSOIL REQUIRED .....	643 C.Y.
<b>MATERIAL BALANCE ( + =EXCESS, - =NEED )</b>	
BORROW TYPE 'A' .....	0 C.Y.
BORROW TYPE 'F' .....	+5633 C.Y.
TOPSOIL .....	-643 C.Y.
UNSUITABLE MATERIAL .....	+520 C.Y.
<i>THIS CHART IS FOR INFORMATIONAL PURPOSES ONLY. EARTHWORK SUMMARY IS BASED ON ESTIMATED QUANTITIES FOR EXCAVATION, BORROW, AND TOPSOIL.</i>	

### DRAWING NO. G-1

#### PROJECT NOTES THIRD TRACK

### TRACK MONITORING

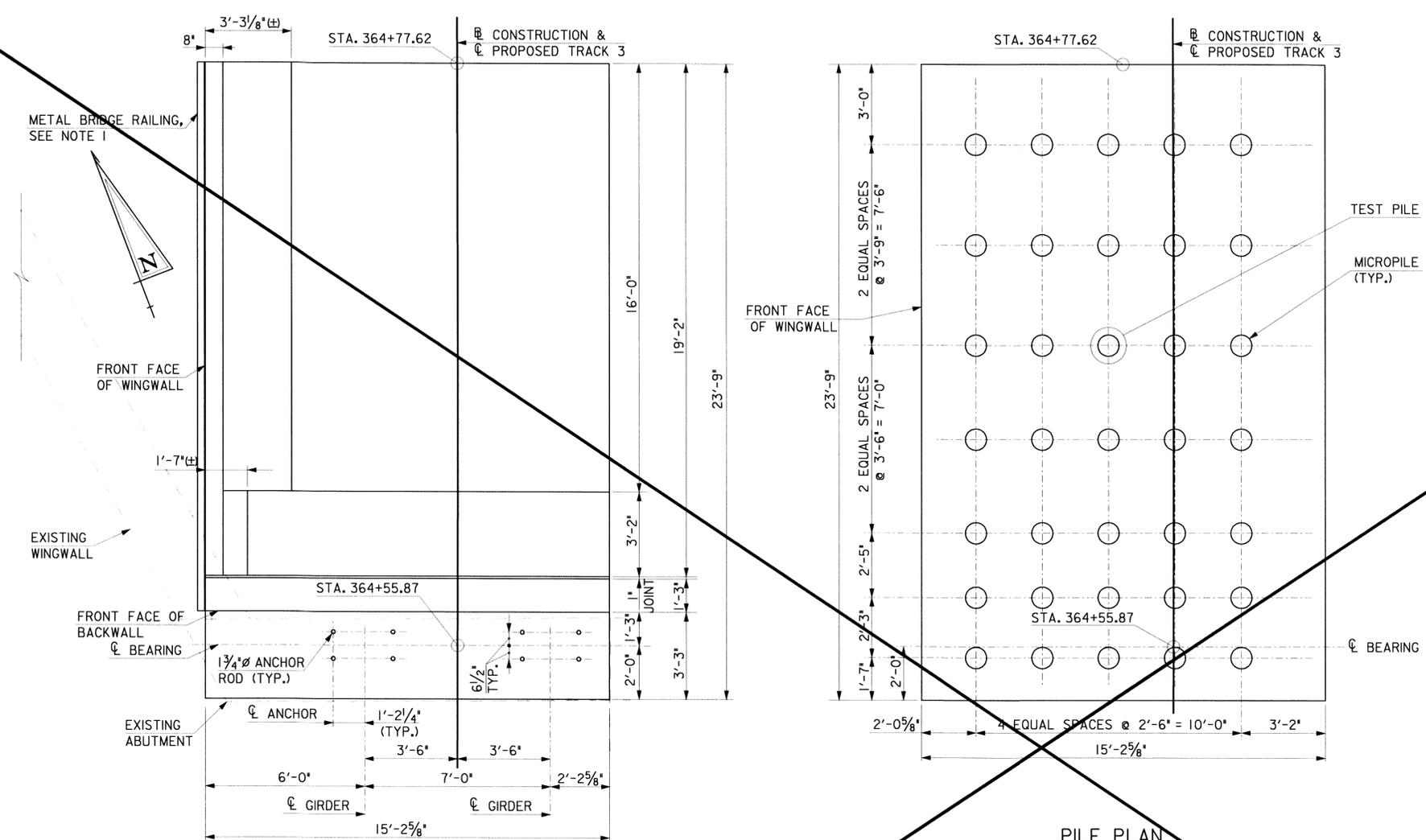
- A. **SCOPE:** IF ANY WORK THAT COULD POTENTIALLY AFFECT THE STABILITY OF THE TRACK IS OCCURRING WITHIN 50 FEET OF A TRACK, OR WITHIN THE INFLUENCE LINE OF A TRACK, THEN MONITORING POINTS SHALL BE ESTABLISHED ALONG THE TRACK. THE INFLUENCE LINE DESCENDS FROM A POINT ONE FOOT HORIZONTALLY AWAY FROM THE OUTSIDE END OF THE TIE BOTTOM ONE UNIT VERTICALLY FOR EVERY UNIT AND A HALF HORIZONTALLY.
- B. **SAFETY:** ALL WORK CLOSE ENOUGH TO FOUL A TRACK MUST ONLY BE PERFORMED UNDER THE DIRECTION OF QUALIFIED RAILROAD PERSONNEL. PEOPLE PERFORMING TRACK MONITORING ARE CLASSIFIED AS ROADWAY WORKERS AND MUST BE TRAINED IN ROADWAY WORKER PROTECTION.
- C. **FOULING DEFINITION:** ANY EQUIPMENT OR MATERIAL SHALL BE CONSIDERED TO BE FOULING A TRACK OR OVERHEAD WIRE WHEN LOCATED WITHIN 15 FEET FROM THE CENTERLINE OF THE TRACK OR WITHIN 15 FEET FROM THE WIRE OR IN SUCH A POSITION THAT FAILURE OF SAME, WITH OR WITHOUT LOAD, WOULD BRING IT WITHIN 15 FEET FROM THE CENTERLINE OF TRACK OR WITHIN 15 FEET FROM THE WIRE.
- D. **POINTS:** EACH LOCATION SHALL INCLUDE A POINT ON THE TOP OF RAIL MARKED WITH PAINT OR CRAYON ON THE FIELD SIDE OF THE RAIL AND USED FOR VERTICAL MEASUREMENTS, AND A POINT ON THE TIE FOR HORIZONTAL MEASUREMENTS. IN WOOD TIES, THE POINT SHALL BE MARKED WITH A PK NAIL OR SIMILAR SURVEYOR 3/8" S MARKER; ON CONCRETE OR STEEL TIES THE POINT SHALL BE MARKED WITH PAINT.
- E. **POINT LOCATIONS:** REFERENCE POINTS SHALL BE ESTABLISHED ALONG THE TRACK BEGINNING AT THE POINT WHERE THE WORK IS CLOSEST TO THE TRACK. POINTS SHALL CONTINUE TO BE PLACED AT INTERVALS OF 50 FEET ALONG THE TRACK TO THE POINT WHERE THE WORK ENDS OR DOES NOT MEET THE CONDITIONS OUTLINED ABOVE, AND THEN AT 50 FEET, 100 FEET, AND 200 FEET AWAY FROM THE END POINT(S). WHERE MORE THAN ONE TRACK MAY BE AFFECTED, POINTS SHALL BE ESTABLISHED ON EACH TRACK THAT COULD BE AFFECTED.
- F. **MEASUREMENT ACCURACY:** MONITORING POINTS SHALL BE ESTABLISHED TO WITHIN 0.001 FEET, AND MONITORING SHALL BE DONE TO 0.01 FEET.
- G. **MONITORING:** MONITORING SHALL BE PERFORMED AT THE BEGINNING AND END OF EVERY SHIFT OF WORK. POINTS SHALL BE MEASURED, THE MEASUREMENTS RECORDED, AND THE NUMBERS COMPARED WITH PREVIOUS MEASUREMENTS. ALL POINTS SHALL BE MEASURED EACH TIME MONITORING OCCURS, EXCEPT FOR THE POINTS 200 FEET AWAY FROM THE END OF WORK; THESE POINTS SHALL ONLY BE MEASURED IF ANY OF THE OTHER MEASUREMENTS EXCEEDS AN ALLOWABLE DEVIATION.
- H. **ALLOWABLE DEVIATIONS:** IF TRACK IS FOUND TO HAVE MOVED EITHER VERTICALLY OR HORIZONTALLY BY MORE THAN ONE HALF OF THE AMTRAK MAINTENANCE LIMITS AS SPECIFIED IN AMTRAK 3/8" S MW-1000 FOR THE PARTICULAR CLASS OF TRACK INVOLVED, THEN ALL WORK SHALL CEASE IMMEDIATELY AND THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGNATED AMTRAK PROJECT ENGINEER. WORK MAY NOT RESUME UNTIL THE DESIGNATED AMTRAK PROJECT ENGINEER HAS INSPECTED THE SITE AND APPROVED.
- I. **TRACK MAINTENANCE:** DEFICIENCIES IN TRACK SURFACE AND ALIGNMENT CAUSED BY CONSTRUCTION ACTIVITIES SHALL BE CORRECTED SOLELY BY AMTRAK FORCES AT THE CONTRACTOR'S EXPENSE WITH NO ADDITIONAL COMPENSATION FROM THE DEPARTMENT.
- J. **BID ITEM:** THIS WORK IS INCLUDED IN BID ITEM 763502 "MAINTENANCE OF RAILROAD TRAFFIC (AMTRAK)".

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS
27-512-01	NEW CASTLE	HPP-2005 (028)	3	140
<b>NEC COMMUTER RAIL IMPROVE.- DELAWARE YARD to RAGAN - Civil, Structural</b>				
DATE: NOVEMBER 10, 2010				
<b>REVISIONS</b>				
Δ	REVISED DATE-EHL,	2011-10-05		

TRACK CLASS	MAX. PASSENGER SPEED (MPH)	GROSS LEVEL (INCHES) The Difference in Cross Level Between Any Two Points Less Than		DEVIATION FROM PROFILE 31' CHORD INCHES		DEVIATION FROM HORIZONTAL ALIGNMENT INCHES	DEVIATION FROM HORIZONTAL ALIGNMENT INCHES
		10'	62'	31' CHORD	62' CHORD	31' CHORD	62' CHORD
<b>MAINTENANCE LIMITS</b>							
1	15	1	2 1/4	2 5/8	2 1/4	N/A	3 3/4
2	30	1	1 5/8	2 1/4	2	N/A	2 1/4
3	60	1	1	1 1/2	1 5/8	N/A	1 1/4
4	80	1	1	1 1/8	1 1/2	N/A	1
5	90	1	1	3/4	1	N/A	1/2
6	110	3/4	1	3/4	3/4	3/8	1/2
7	125	3/4	1	3/4	3/4	3/8	3/8
8	160	3/4	1	1/2	3/4	3/8	3/8
9	200	3/4	1	3/8	1/2	3/8	3/8
<b>1/2 MAINTENANCE LIMITS</b>							
1	15	1/2	1 1/8	1 5/16	1 1/8	N/A	1 7/8
2	30	1/2	13/16	1 1/8	1	N/A	1 1/8
3	60	1/2	1/2	3/4	13/16	N/A	5/8
4	80	1/2	1/2	9/16	3/4	N/A	1/2
5	90	1/2	1/2	3/8	1/2	N/A	1/4
6	110	3/8	1/2	3/8	3/8	3/16	1/4
7	125	3/8	1/2	3/8	3/8	3/16	3/16
8	160	3/8	1/2	1/4	3/8	3/16	3/16
9	200	3/8	1/2	3/16	1/4	3/16	3/16

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
NEW CASTLE		N/A	39	140
<b>NEC COMMUTER RAIL IMPROVEMENTS WILMINGTON TO NEWARK, DE</b>				
DATE: APRIL 20, 2009				
REVISIONS				
1. Delete Sheet 9-23-11 TRB				

**DRAWING NO. S-3  
ABUTMENT B AND PILE PLAN  
MILL CREEK BRIDGE**



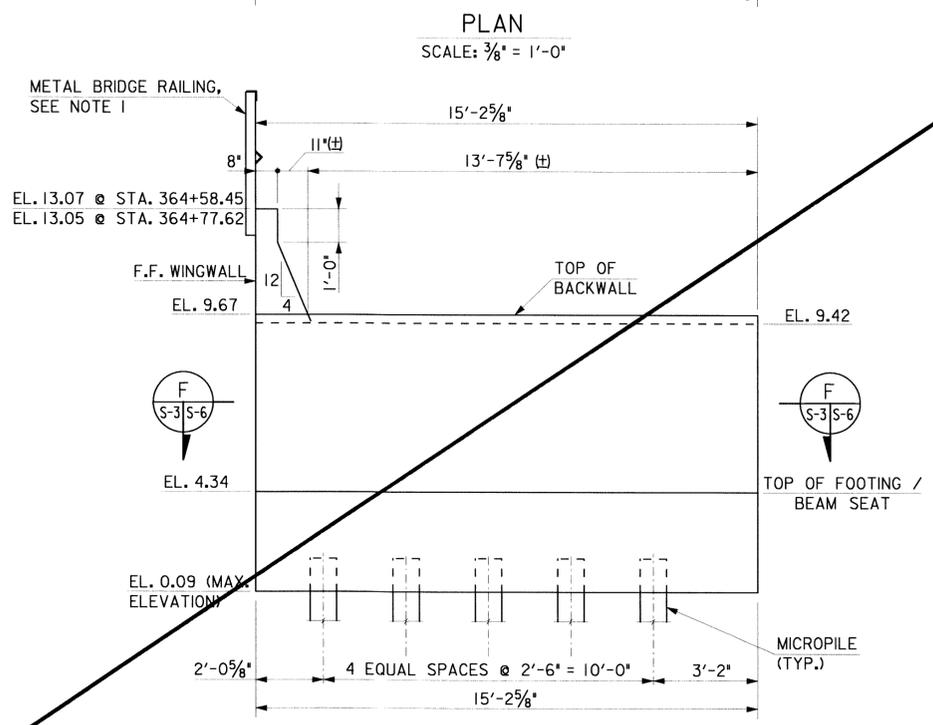
**MICROPILE ALLOWABLE LOADS \* (SERVICE LOADS) [KIPS]**

SUBSTRUCTURE UNIT	COMPRESSION	TENSION	LATERAL
ABUTMENT A & B	73.0	14.0	10.5

\* THE MICROPILES SHALL EXTEND AT LEAST 10 PILE DIAMETERS INTO CONTINUOUS ROCK WITH NO VOIDS GREATER THAN SIX INCHES.

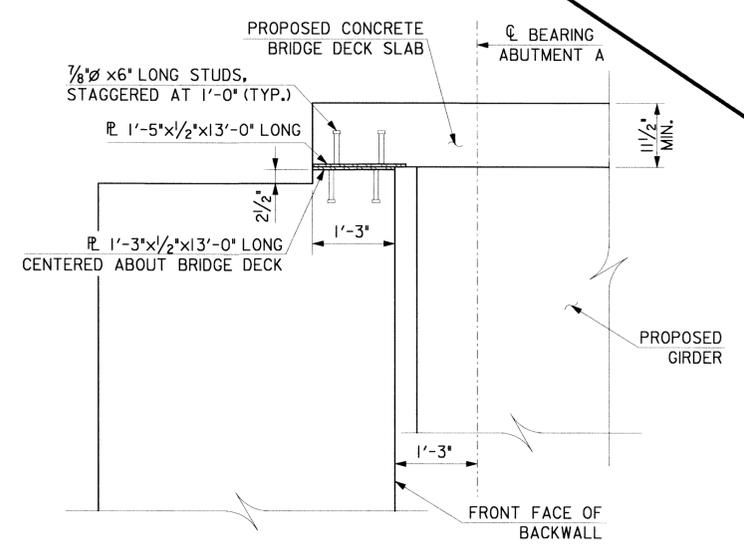
THE CONTRACTOR SHALL DESIGN THE MICROPILE TO FOOTING CONNECTION DETAIL TO MEET THE REQUIRED CAPACITY AS SHOWN ABOVE. THE COST OF MICROPILE TO FOOTING CONNECTION SHALL BE INCIDENTAL TO THE INSTALLATION OF THE MICROPILE.

**PILE PLAN**  
SCALE: 3/8" = 1'-0"



**ELEVATION**  
SCALE: 3/8" = 1'-0"

NOTE:  
EXISTING TIMBER PILES AND MASONRY NOT SHOWN FOR CLARITY



**DETAIL A**  
SCALE: 3/4" = 1'-0"

NOTE:  
1. FOR WINGWALL METAL BRIDGE RAILING, SEE DWG. NO. RW-3.

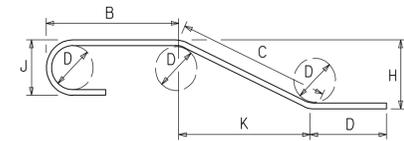
4/13/2009  
M:\projects\2007\07082.DTC\Third-Trk\CADD\struct\503-PilePlan.dgn  
PLOTTER = RAL-PS-EHL-PLT, PEN TABLE = BALTIMORE.TBL

PREL. TRACING — EMT — DESIGN — BUH — CHKD. — DCK

PREL. TRACING \_\_\_\_\_ DESIGN \_\_\_\_\_ CHKD. \_\_\_\_\_  
 PLOTTER = RAIL-PS-EHL-PLT, PEN TABLE = BALTIMORE.TBL  
 8804TES8  
 88FILE88  
 88PLOT88

SPECIFICATIONS					BENDING DIMENSIONS (FT-IN / QUARTER IN)										
QTY.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	O
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											
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											

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



- NOTES:**
- FIGURES SHOWN IN CIRCLES REPRESENT BAR BEND TYPES.
  - STANDARD BAR BENDS INCLUDE ONLY TYPES 1-32, S1-S12, AND T1-T16.
  - ALL DIMENSIONS ARE OUT-TO-OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180° AND 135° HOOKS.
  - "J" DIMENSIONS ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
  - 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.
  - "H" DIMENSIONS OF STIRRUPS TO BE SHOWN WHERE NECESSARY TO FIT WITHIN THE CONCRETE.
  - UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.
  - WHERE SLOPE DIFFERS FROM 45° OFFSET, "H" AND "K" MUST BE SHOWN.
  - WHERE BARS ARE TO BE BENT MORE ACCURATELY THAN STANDARD BENDING TOLERANCES, BENDING DIMENSIONS WHICH REQUIRE CLOSER FABRICATION SHOULD HAVE LIMITS INDICATED.
  - FOR RECOMMENDED DIAMETER "D", OF BENDS, HOOKS, ETC., REFER TO TABLE AT RIGHT, 'CRS' OR 'ACI' TABLES.
  - TYPE S1-S12, T1-T16 APPLY TO BAR SIZES 3 THROUGH 6.

CONTRACT 27-612-01	COUNTY NEW CASTLE	F.A.P. NO. N/A	SHEET NO. TOTAL SHTS. 71A 140
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**NEC COMMUTER RAIL IMPROVEMENTS- DELAWARE  
YARD TO RAGAN - CIVIL, STRUCTURAL**

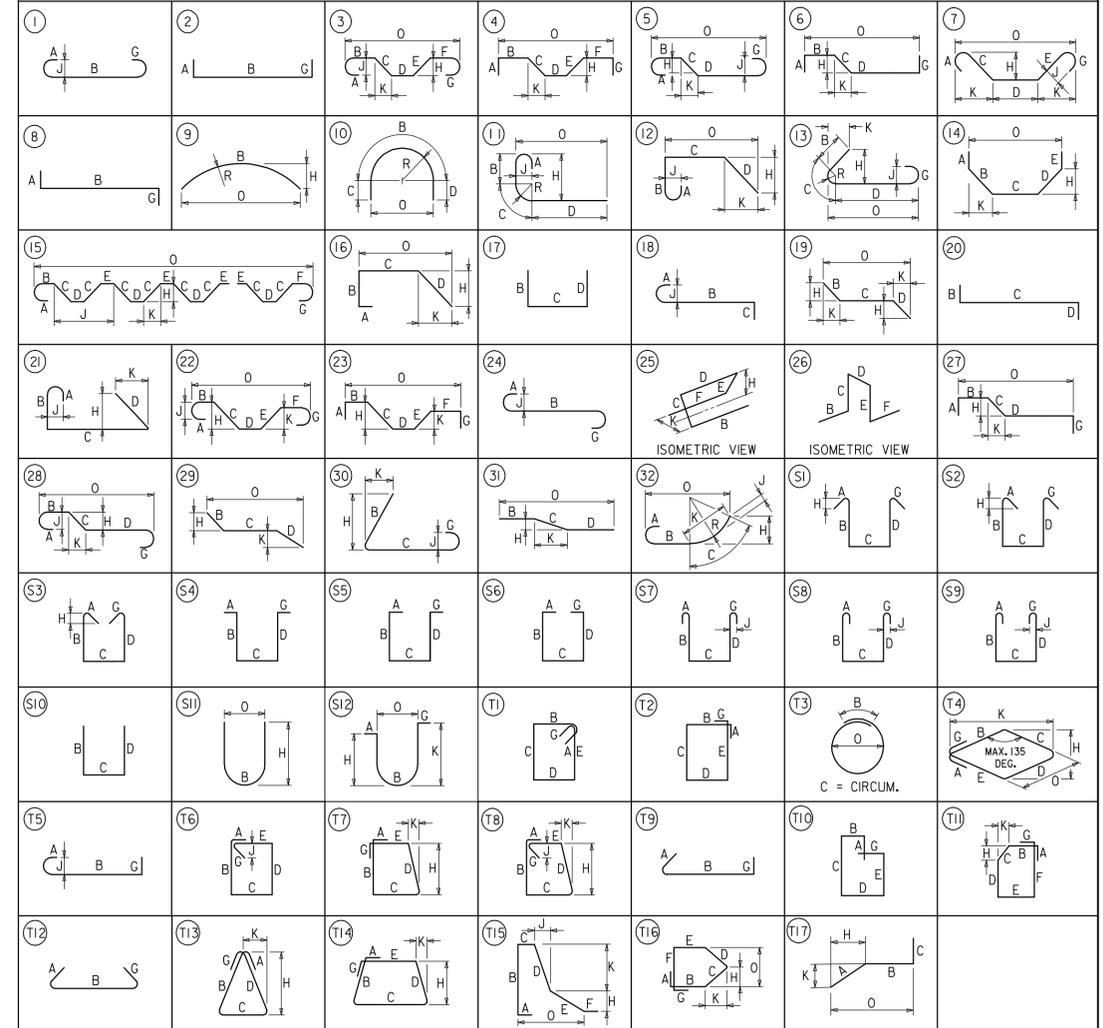
DATE: APRIL 20, 2009

**REVISIONS**

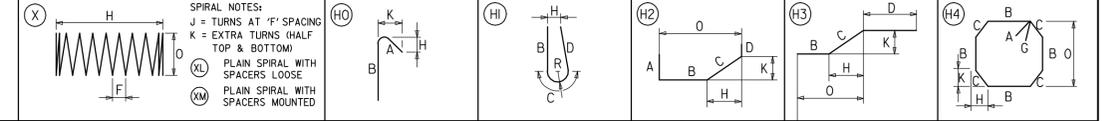
NEW DWG. EHL 2011-10-18
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ASTM STANDARD ENGLISH REINFORCING BARS				RECOMMENDED END HOOKS, APPLICABLE TO ALL GRADES			
NOMINAL DIMENSIONS				180° HOOKS		90° HOOKS	
BAR SIZE	DIAMETER (inches)	AREA (inches <sup>2</sup> )	WEIGHT (lbs. / ft.)	D	A OR G	J	A OR G
3	0.375	0.110	0.376	20"	5"	3"	6"
4	0.500	0.200	0.668	3"	6"	4"	8"
5	0.625	0.310	1.043	30"	7"	5"	10"
6	0.750	0.440	1.502	40"	8"	6"	1'-0"
7	0.875	0.600	2.044	50"	10"	7"	1'-2"
8	1.000	0.790	2.670	6"	11"	8"	1'-4"
9	1.128	1.000	3.400	90"	1'-3"	110"	1'-7"
10	1.270	1.270	4.303	100"	1'-5"	1'-10"	1'-10"
11	1.410	1.560	5.313	1'-0"	1'-7"	1'-20"	2'-0"
14	1.693	2.250	7.650	1'-60"	2'-3"	1'-90"	2'-7"
18	2.257	4.000	13.600	2'-0"	3'-0"	2'-40"	3'-5"

**STANDARD BAR BENDS**



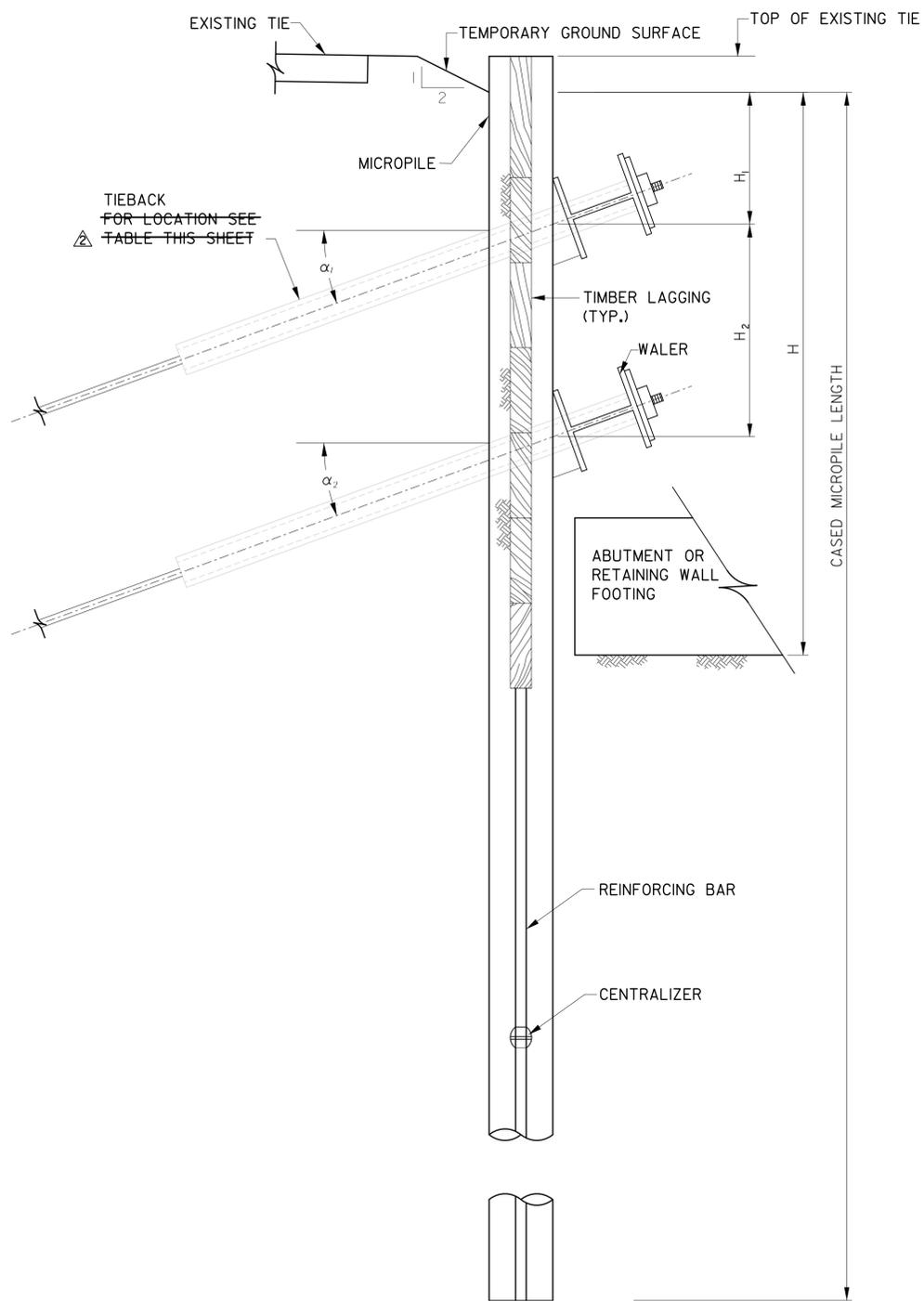
**SPECIAL BAR BENDS**



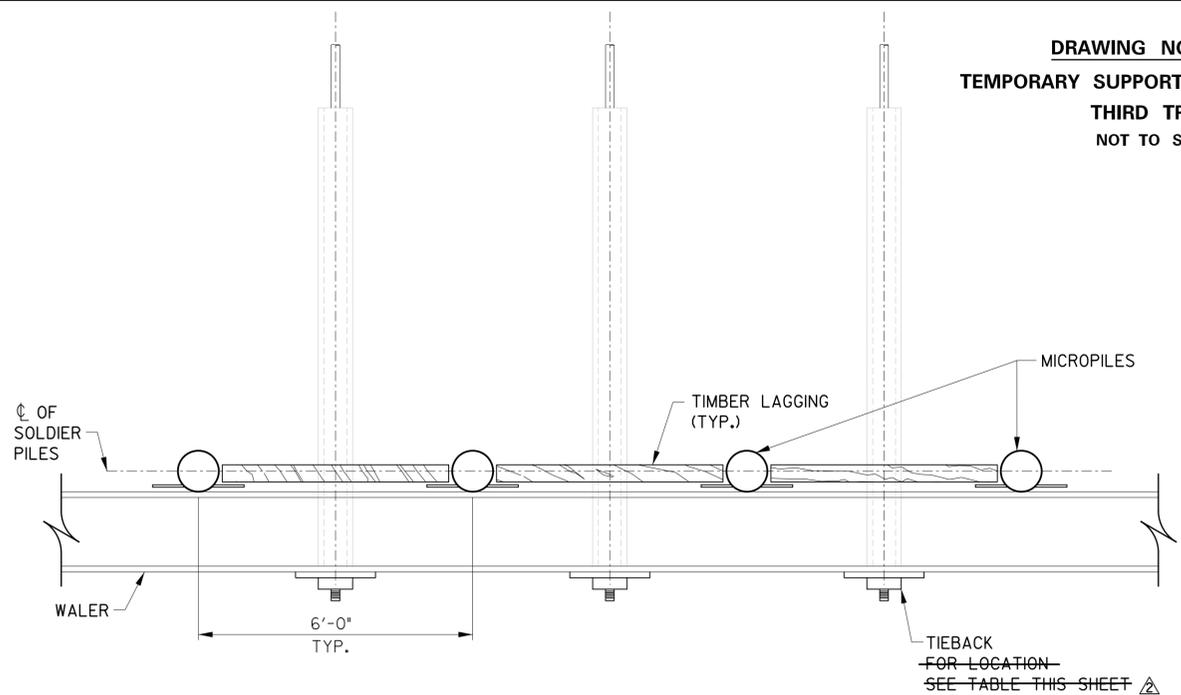
**SPIRAL NOTES:**  
 J = TURNS AT 'F' SPACING  
 K = EXTRA TURNS (HALF TOP & BOTTOM)  
 (XL) PLAIN SPIRAL WITH SPACERS LOOSE  
 (MM) PLAIN SPIRAL WITH SPACERS MOUNTED

CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
NEW CASTLE	N/A	N/A	73	140
<b>NEC COMMUTER RAIL IMPROVEMENTS WILMINGTON TO NEWARK, DE</b>				
DATE: APRIL 20, 2009				
<b>REVISIONS</b>				
△ DELETED TEXT-EHL, 2011-10-05				

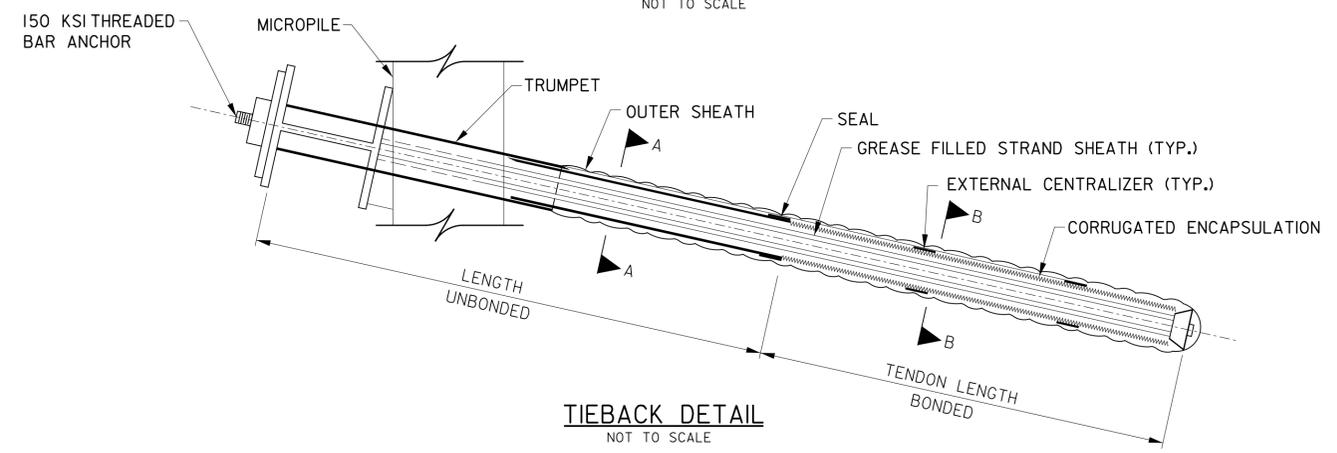
**DRAWING NO. SOE-2**  
**TEMPORARY SUPPORT OF EXCAVATION**  
**THIRD TRACK**  
**NOT TO SCALE**



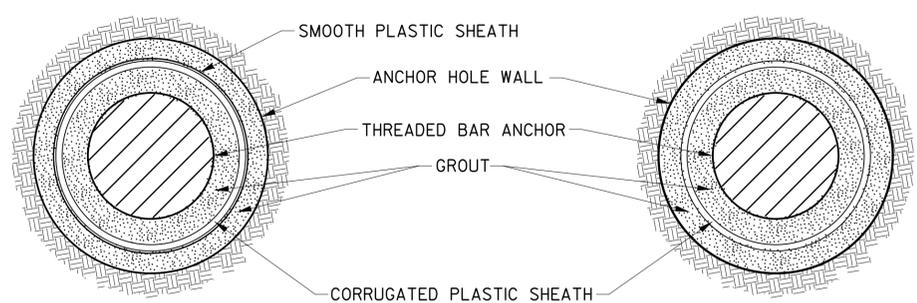
**SUPPORT OF EXCAVATION DETAIL**  
NOT TO SCALE



**TYPICAL PLAN SECTION**  
NOT TO SCALE



**TIEBACK DETAIL**  
NOT TO SCALE



**SECTION A-A**  
NOT TO SCALE

**SECTION B-B**  
NOT TO SCALE

- NOTES:
1. FOR BORING AND DRIVE TEST, SEE DWG. NO SB-67-39 △ THROUGH DWG. NO SB-75-57. △
  2. WATER SHALL NOT BE USED FOR INSTALLATION OF MICROPILES AND TIE BACKS.
  3. MICROPILES SHALL BE CASED FOR THE ENTIRE LENGTH.
  4. THE MICROPILES SHALL EXTEND A MINIMUM OF 10 FEET INTO CONTINUOUS ROCK WITH NO VOIDS GREATER THAN 6-INCHES.
  5. TIEBACKS SHALL BE DRILLED IN PLACE WITH CASING. CASING SHALL BE EXTRACTED ONLY AS GROUT IS PLACED IN THE TIEBACK.
  6. THE LENGTH OF TIEBACKS SHALL BE DESIGNED TO BE WITHIN THE RIGHT-OF-WAY OF THE PROJECT. THE TIEBACKS SHALL EXTEND A MAXIMUM HORIZONTAL DISTANCE OF 39 FEET FROM THE CL OF EXISTING TRACK 3.

PREL. TRACING EMT DESIGN BJK CHKD. DCK  
 BMD\GZ\BIB\2007\2007\07092.DTC\Thir-q-TRK\CADD\STRUCT\ST01\_TSOE\_Add2.dgn  
 PLOTTER = RAL-PS-EHL-PLT, PEN TABLE = BALTIMORE.TBL