

REPAUNO RAIL LOOP EMBANKMENT CONSTRUCTION

GENERAL NOTES:

- ELEVATIONS SHOWN HEREIN REFER TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
- REFER TO DRAWING AL-1 FOR RAILROAD ALIGNMENT AND STATIONING.
- RAIL TRACK LAYOUT REFERENCES "DOUBLE TRACK" OF THE TYPICAL ROADBED AND BALLAST SECTIONS PREPARED BY CONRAIL DATED AUGUST 1988.
- AVERAGE EXISTING GRADES ELEVATIONS DEPICTED IN TYPICAL CROSS SECTIONS ARE DERIVED FROM SURVEYED GROUND SURFACE ELEVATION PROVIDED BY RAMBOLL AT GEOTECHNICAL BORING LOCATIONS.
- ALL WORK TO BE PERFORMED IN ACCORDANCE WITH APPLICABLE CODES.

SUBGRADE PREPARATION NOTES:

- CLEAR AND GRUB THE WORK ZONE. REMOVE VEGETATION AND TOPSOIL. GRADE AND COMPACT TO A LEVEL SURFACE PRIOR TO PLACEMENT OF FILL.
- PROOF ROLL SUBGRADE IN THE PRESENCE OF THE ENGINEER WITH A FULLY LOADED TRIAXLE DUMP TRUCK. IDENTIFY HARD POINTS OR SOFT ZONES AND PUMPING GROUND.
- HARD POINT SUCH AS BOULDERS OR DEBRIS SHALL BE REMOVED AND REPLACED WITH COMPACTED GRANULAR FILL. SOFT ZONES OR PUMPING GROUND SHALL BE REMOVED AND REPLACED WITH COMPACTED GRANULAR FILL.
- SUBGRADE SHALL BE INSPECTED AND APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO EMBANKMENT FILL PLACEMENT.
- EMBANKMENT FILL SHALL NOT BE PLACED OVER FROZEN OR DISTURBED SUBGRADE OR AREAS OF STANDING WATER.

EMBANKMENT FILL:

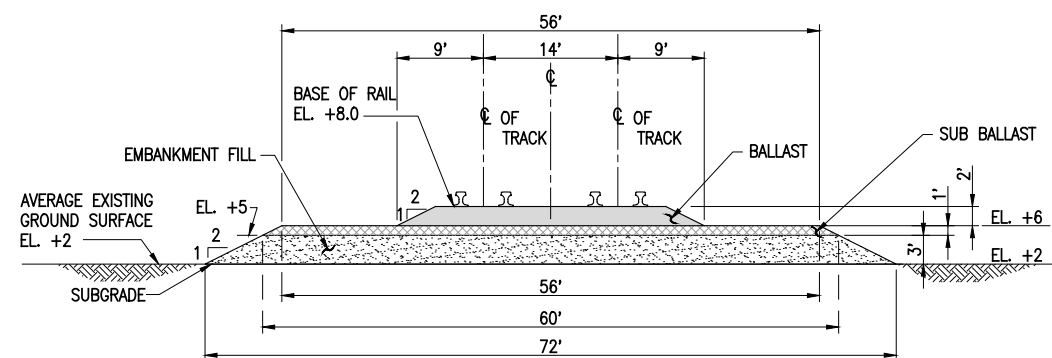
- EMBANKMENT FILL SHALL CONSIST OF CLEAN, FREELY DRAINING WELL GRADED SAND OR GRAVELLY SAND HAVING A MAXIMUM PARTICLE SIZE OF 3 INCHES AND A MAXIMUM OF 15% PASSING THE NO. 200 SIEVE.
- EMBANKMENT FILL SHALL BE PLACED AND COMPACTED IN 12 INCH LIFTS TO A MINIMUM OF 95% OF THE MODIFIED PROCTOR (ASTM D 1557) MAXIMUM DENSITY WITH A 25,000 LB. DRUM VIBRATORY ROLLER. COMPACTION TESTING (COORDINATED BY THE OWNER) SHALL OCCUR AT 1 TEST PER 2500 SQFT. CHANGE IN FILL MATERIAL WILL REQUIRE A NEW MAXIMUM DENSITY.
- UPON COMPLETION OF CONSTRUCTION, VEGETATED COVERS SHALL BE ESTABLISHED OVER EXPOSED SLOPES IN ACCORDANCE WITH 2011 AREMA CODE.

SUB BALLAST:

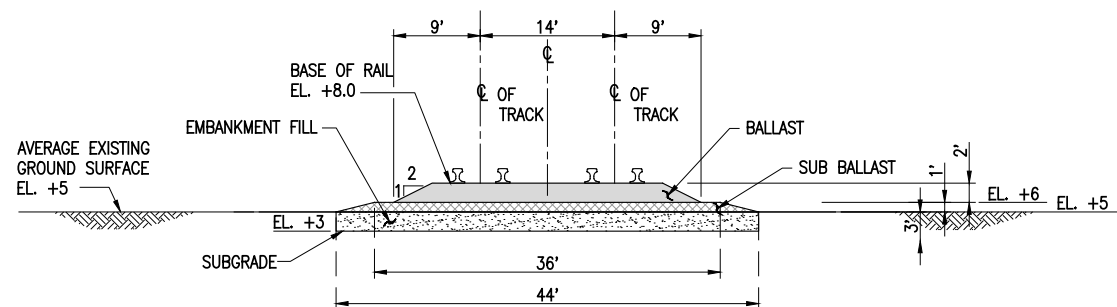
- MINIMUM THICKNESS OF SUB BALLAST SHALL BE 1 FOOT. EXCAVATE TO OBTAIN SUBGRADE ELEVATION FOR MINIMUM SUB BALLAST THICKNESS.
- SUB BALLAST SHALL BE WELL GRADED SAND WITH GRAVEL MIXTURES AND A MAXIMUM OF 2-3% FINES PASSING THE NO. 200 SIEVE. DENSE GRADED AGGREGATE (DGA) OR AGGREGATE BASE COURSE (ABC) ARE SUITABLE SUB BALLAST MATERIALS. SUB BALLAST SHALL BE FREE OF VEGETATION AND UNSATISFACTORY MATERIAL.
- SUB BALLAST SHALL BE PLACED AND COMPACTED IN 6 INCH LIFTS TO A MINIMUM OF 95% OF THE MODIFIED PROCTOR (ASTM D1557) MAXIMUM DENSITY WITH A 25,000 LB. DRUM VIBRATORY ROLLER. COMPACTION TESTING (COORDINATED BY THE OWNER) SHALL OCCUR AT 1 TEST PER 2500 SQFT.
- SUB BALLAST SURFACE SHALL BE CLEAR OF FREE SURFACE DEFECTS AND IMPERFECTIONS THAT WOULD RETAIN WATER PRIOR TO PLACEMENT OF NEXT LIFT. VEHICULAR TRAFFIC SHALL BE KEPT TO A MINIMUM ACROSS NEWLY PREPARED SUB BALLAST SURFACES

BALLAST:

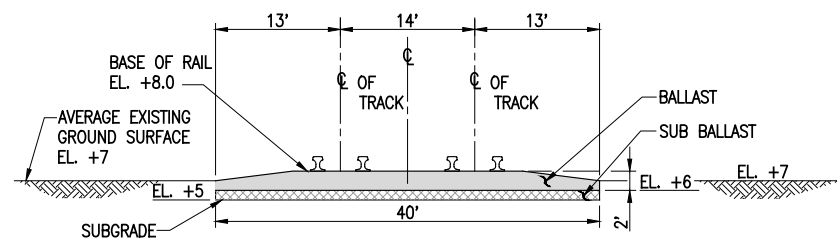
- MINIMUM THICKNESS OF BALLAST SHALL BE 2 FEET.
- BALLAST SHALL BE AN IMPORTED DURABLE CRUSHED STONE OR GRAVEL MIXTURES IN ACCORDANCE WITH GRADATIONS 4 OR 4A PER 2011 AREMA CODE. MATERIALS SHALL BE TESTED FOR GRADATION IN ACCORDANCE OF ASTM E11. REUSED OR RECYCLED BALLAST SHALL NOT BE PERMITTED.
- BALLAST SHALL BE PLACED AND COMPACTED IN MAXIMUM 8 INCH LOOSE LIFTS WITH A 25,000 LB. DRUM VIBRATORY ROLLER. COMPACTION SHALL BE PERFORMED UNDER THE INSPECTION OF A GEOTECHNICAL ENGINEER FOR FINAL ACCEPTANCE.



SECTION 1: STATION 70+00 TO 84+00



SECTION 2: STATION 96+00 TO 103+00



SECTION 3: STATION 103+00 TO 115+37 AND 0+00 TO 11+00

PRELIMINARY FOR DISCUSSION

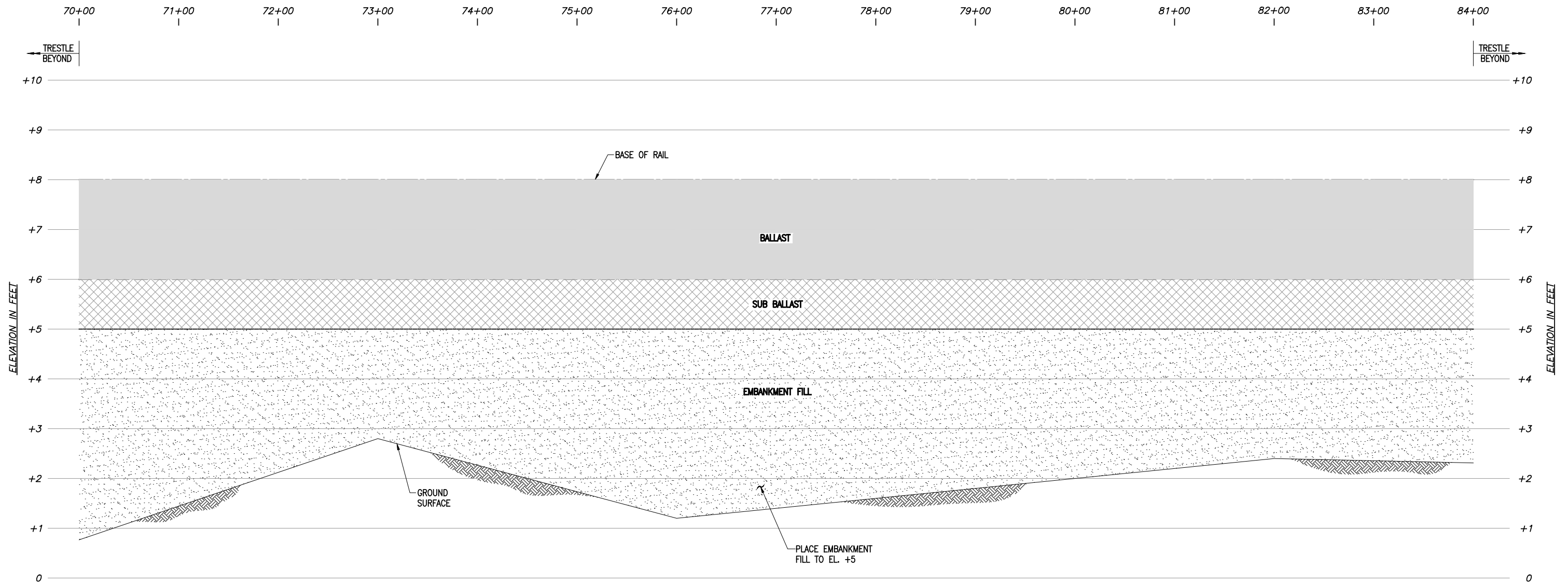
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DRP GIBBSTOWN LOGISTICS CENTER			
GIBBSTOWN		NEW JERSEY	
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MUESER RUTLEDGE CONSULTING ENGINEERS PLLC			
14 PENN PLAZA - 225 WEST 34TH STREET, NEW YORK, NY 10122			
SCALE	MADE BY: L.R.	DATE: 05-05-2021	FILE NUMBER
AS NOTED	CHK'D BY: A.E.	DATE: 05-05-2021	13434
EMBANKMENT SECTIONS			EM-1

WARNING: IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THESE PLANS IN ANY WAY. IF ALTERATIONS TO THESE PLANS ARE MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145 - SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW.





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NOTES:

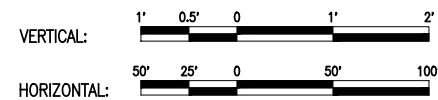
1. REFER TO DRAWING NO. AL-1 FOR REPAUNO RAIL LOOP ALIGNMENT AND STATIONING.
2. REFER TO DRAWING NO. EM-1 FOR GENERAL NOTES AND TYPICAL EMBANKMENT CROSS SECTIONS.
3. GROUND SURFACE ELEVATION INTERPOLATED BETWEEN SURVEY MEASUREMENTS AT GEOTECHNICAL BORING LOCATIONS.



LEGEND:

-  - BALLAST
-  - SUB BALLAST
-  - EMBANKMENT FILL
-  - CUT GROUND SURFACE TO BASE OF SUB BALLAST

STATION 70+00 TO 84+00

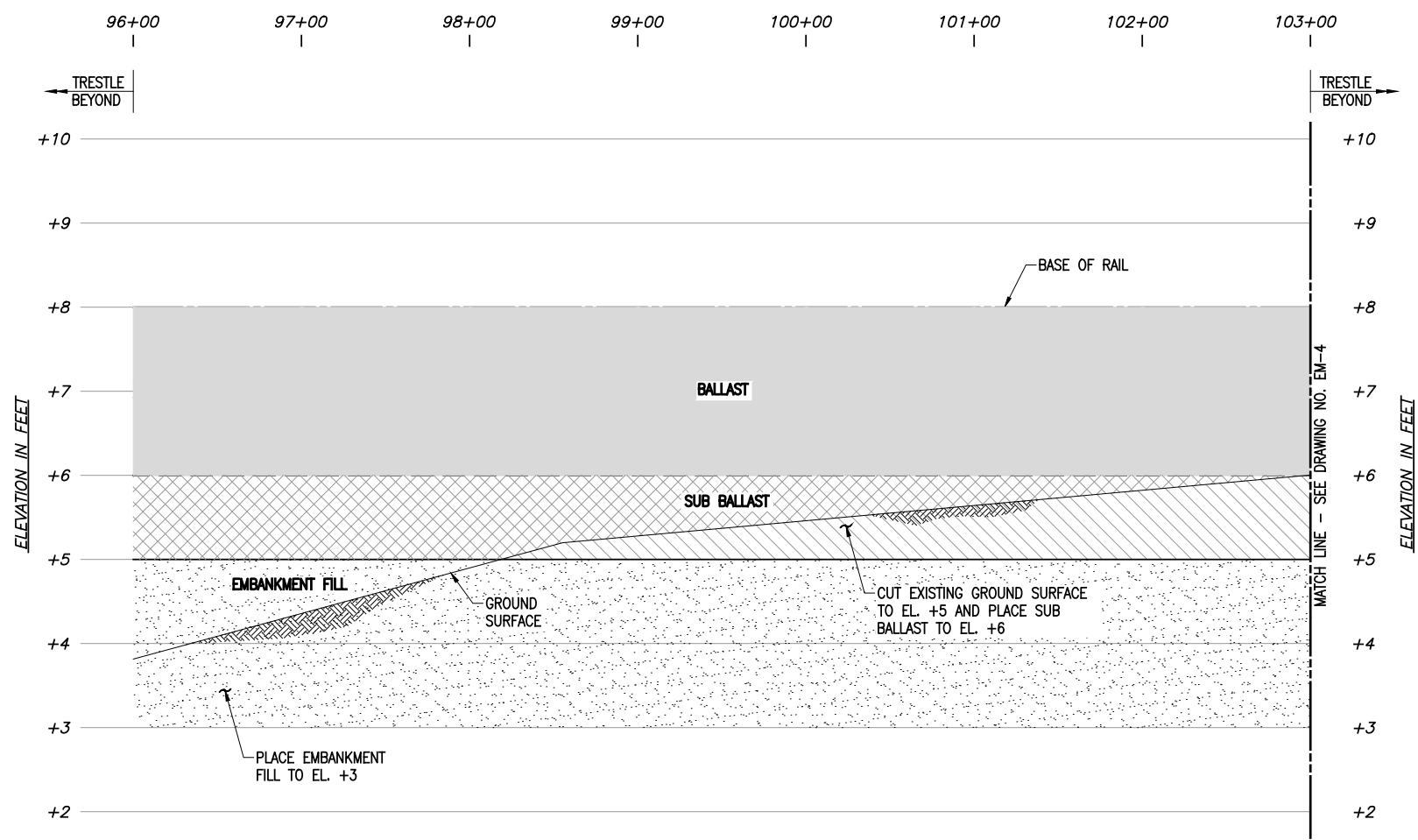


PRELIMINARY FOR DISCUSSION

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PROFILE 1			EM-2
STA. 70+00 TO 84+00			

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STATION 96+00 TO 103+00



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LEGEND:

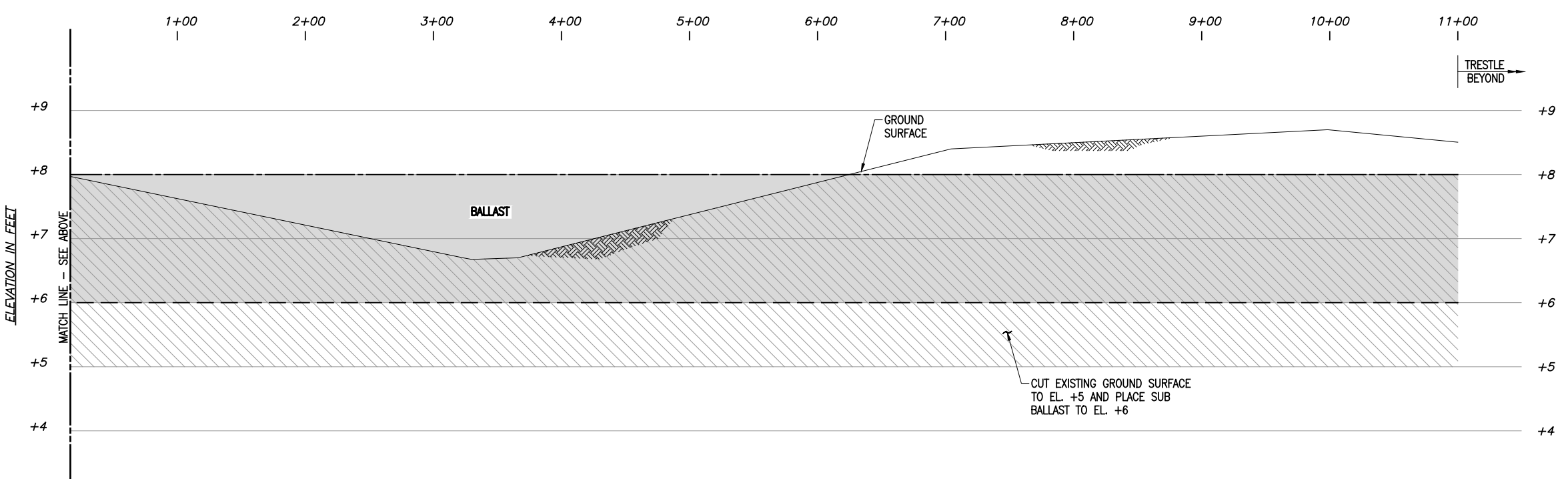
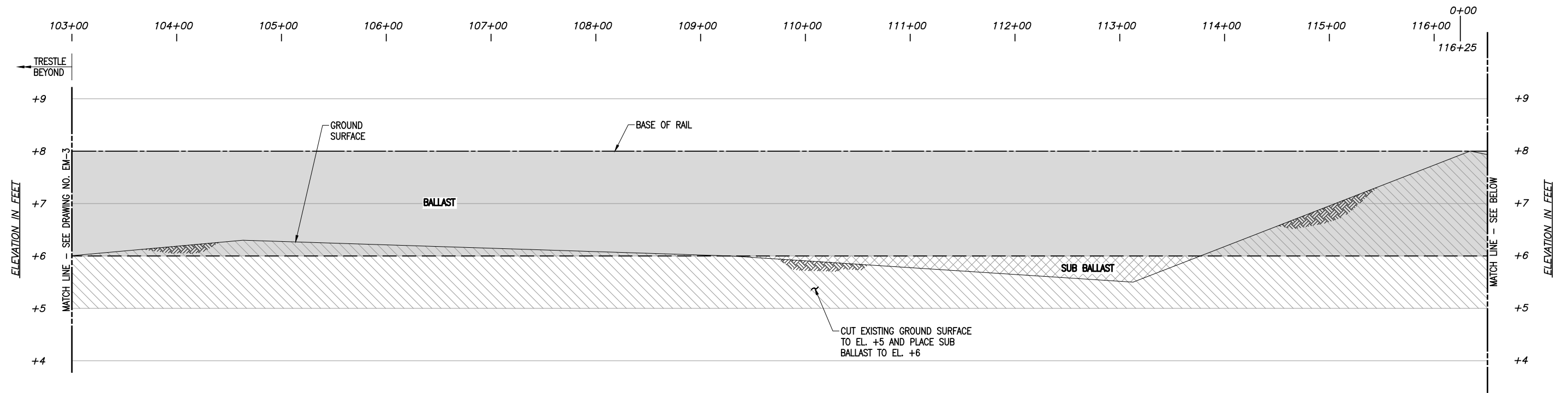
- BALLAST
- SUB BALLAST
- EMBANKMENT FILL
- CUT GROUND SURFACE TO BASE OF SUB BALLAST

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SCALE GRAPHIC	MADE BY: G.D.B. CH'KD BY: A.E.	DATE: XX-XX-XXXX DATE: XX-XX-XXXX	FILE NUMBER 13434
PROFILE 2 STA. 96+00 TO 103+00			EM-3

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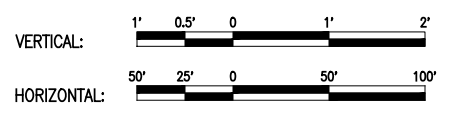


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- LEGEND:**
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 - SUB BALLAST
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PRELIMINARY FOR DISCUSSION

STATION 103+00 TO 115+37 AND 0+00 TO 11+00

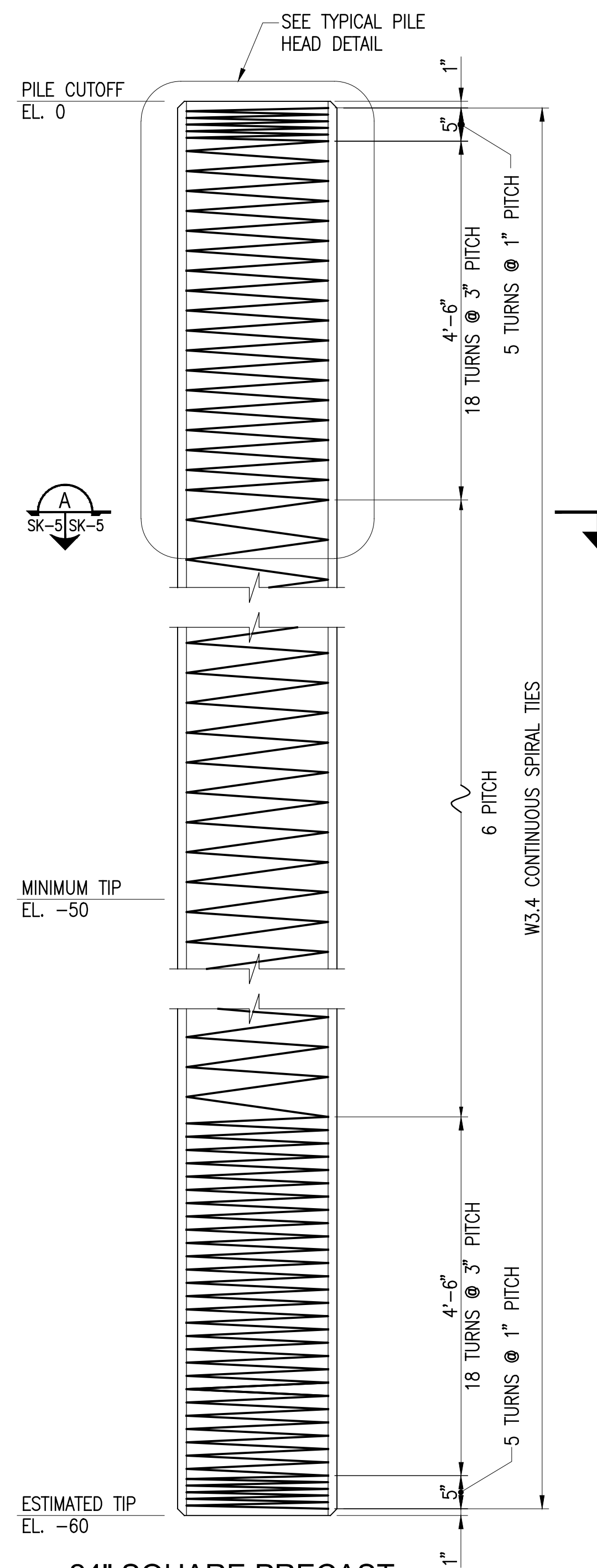


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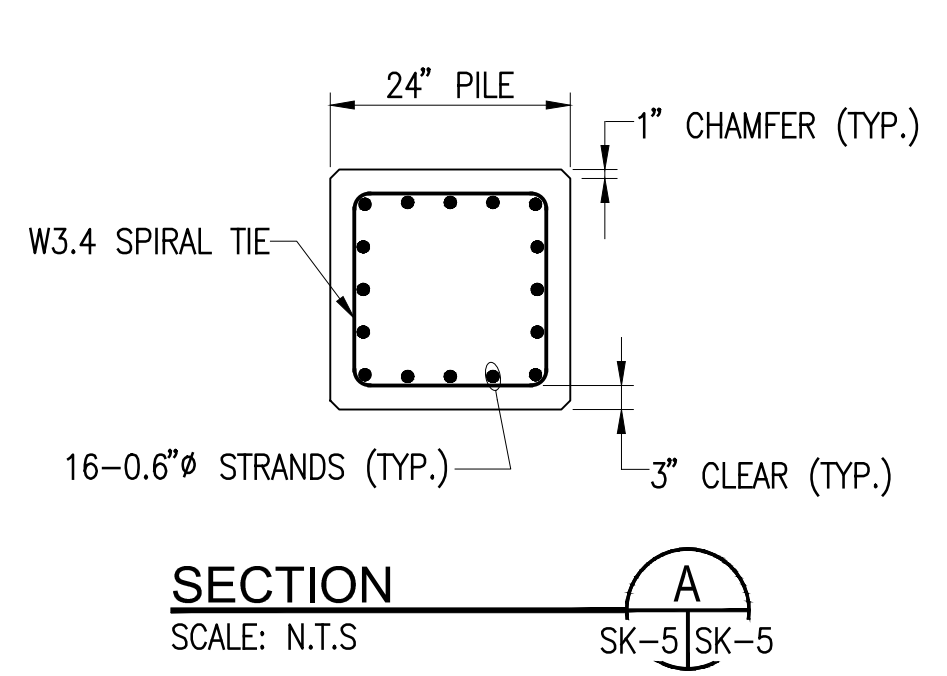
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			NEW JERSEY
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SCALE	MADE BY: G.D.B.	DATE: XX-XX-XXXX	FILE NUMBER
GRAPHIC	CH'KD BY: A.E.	DATE: XX-XX-XXXX	13434
PROFILE 3			EM-4
STA. 103+00 TO 115+37			
AND 0+00 TO 11+00			

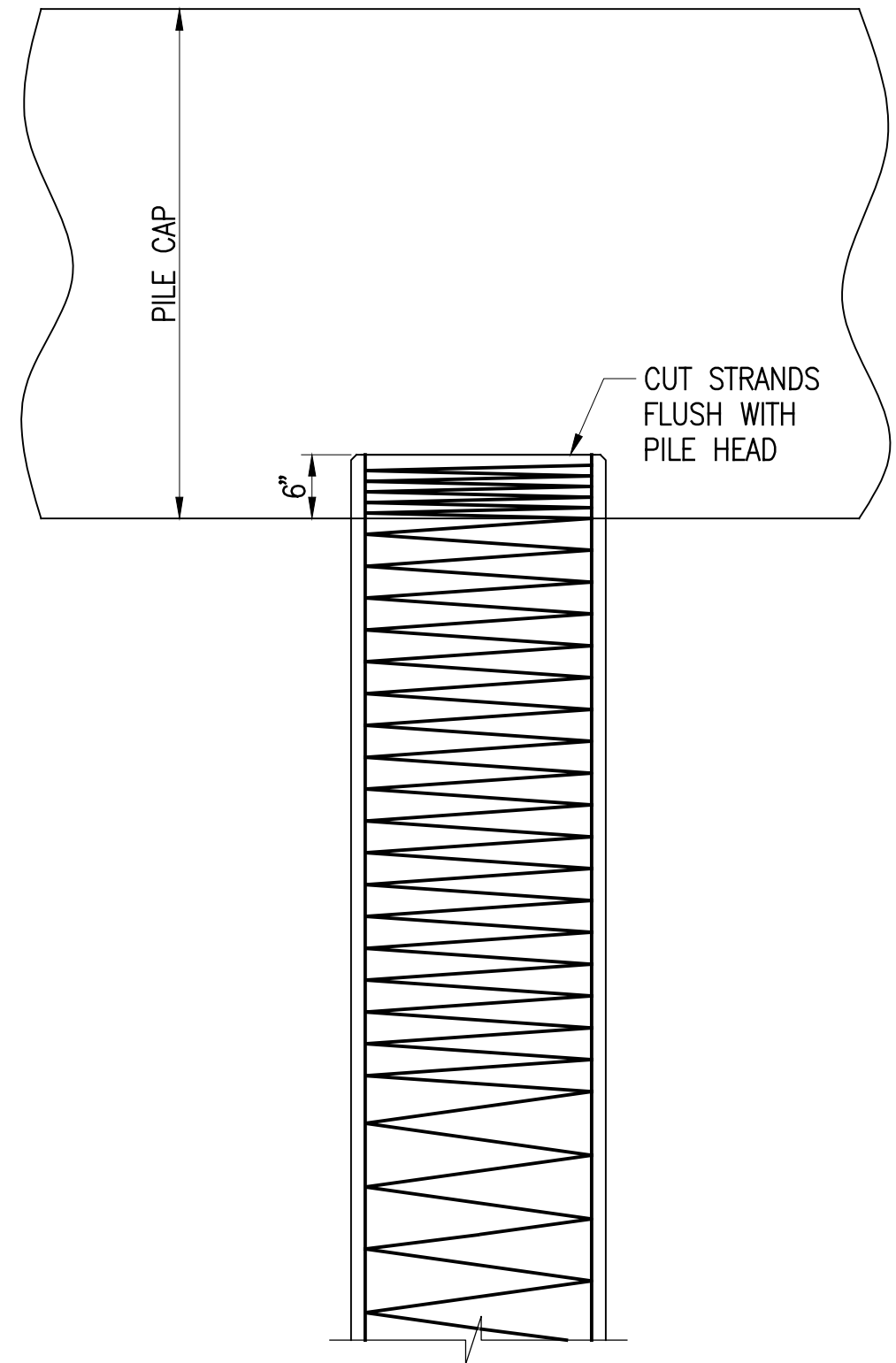
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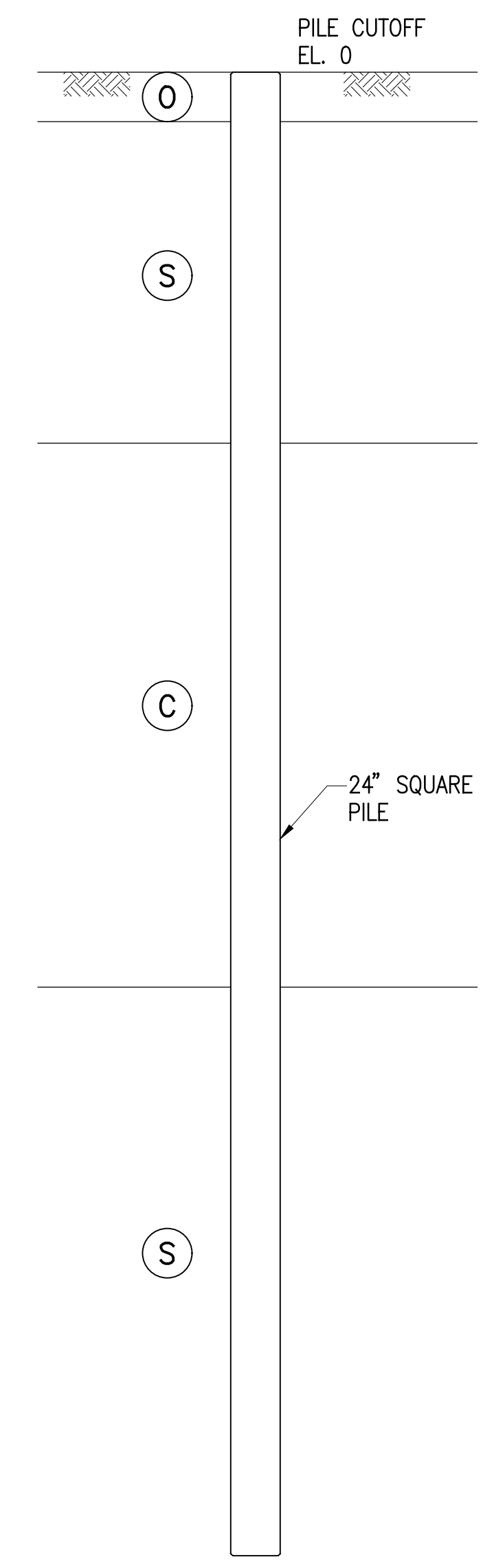
24" SQUARE PRECAST PRESTRESSED CONCRETE PILE
SCALE: 3/4" = 1'-0"



SECTION A-SK-5
SCALE: N.T.S.



TYPICAL PILE HEAD DETAIL
SCALE: 3/4" = 1'-0"



TYPICAL PILE PROFILE
SCALE: N.T.S.

NOTE: SOIL PROFILE SHOWN IS BASED ON BORING MR-3. SEE GEOLOGICAL DATA REPORT FOR MORE INFORMATION.

PILE DRIVING NOTES

- PILES SHALL BE SEATED TO BEARING IN THE LOWER SAND OR GRAVEL LAYER (WHERE CAPACITY MAY BE ACHIEVED).
- PILES SHALL HAVE THE FOLLOWING AXIAL CAPACITY:
 - 150 TON WORKING CAPACITY (ALLOWABLE DESIGN LOAD)
 - 300 TON ULTIMATE CAPACITY
- MINIMUM RATED HAMMER ENERGY SHALL BE APPROXIMATELY 85,000 TO 95,000 FT-LBS OR GREATER DEPENDING UPON THE MODEL, HAMMER EFFICIENCY AND THE PILE CUSHIONING SELECTED. APPROXIMATE MINIMUM DELIVERED ENERGY (NOMINAL ENERGY REDUCED BY HAMMER EFFICIENCY RATIO) SHALL BE AS REQUIRED TO ADVANCE AND SEAT THE PILE WITHOUT OVERSTRESS AND TO ACHIEVE THE REQUIRED CAPACITY.
- SUGGEST PILE DRIVING HAMMER OPERATION AT APPROXIMATELY ONE HALF THE NOMINAL HAMMER STROKE HEIGHT OR LESS (DESTROKE THE HAMMER) DURING ADVANCEMENT THROUGH FILL, ORGANIC, PEAT AND UPPER SAND LAYERS ABOVE THE BEARING STRATA TO MAINTAIN THE PILE MATERIALS WITHIN ALLOWABLE STRESS LEVELS.
- CONTRACTOR TO PERFORM WEAP ANALYSIS TO DEMONSTRATE THE ABOVE PILE CAPACITY, DETERMINE THE FINAL DRIVING CRITERIA AND SUBMIT TO ENGINEER FOR REVIEW.
- PILE AXIAL CAPACITY SHALL BE VERIFIED BY DYNAMIC PILE TESTING (PDA) FIELD TEST PILE PROGRAM. CONTRACTOR TO PERFORM DRIVE TEST PILES (DTP'S) WITH PDA'S PRIOR TO PRODUCTION PILING INSTALLATION.

NOT FOR CONSTRUCTION
05-07-21

REV.	DATE	BY	DESCRIPTION
REPAUNO RAIL LOOP			
GREENWICH		NEW JERSEY	
RAMBOLL			
PRINCETON		NEW JERSEY	
MUESER RUTLEDGE CONSULTING ENGINEERS PLLC 14 PENN PLAZA - 225 WEST 34TH STREET, NEW YORK, NY 10122			
SCALE AS NOTED	MADE BY: W.Z. CH'KD BY: K.D.S.	DATE: 05-06-2021 DATE: 05-06-2021	FILE NUMBER 13434
PILE SECTIONS AND DETAILS			SK-5

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